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Steel Buying Expanding Slowly

Running Down of Inventories Forces Consumers To Order In More Tonnage—Week's Structural Awards Total 65,000 Tons, Heaviest in Two Years—Pittsburgh Base Decree Not Considered Immediate Market Factor

BETTER buying of iron and steel has spread out moderately into new directions the past week. More consumers, apparently, find themselves at a point where their stocks require some attention forcing them to take in more tonnage. Some of the recent price reductions in steel seem to have been helpful in stimulating activity. Bookings by one large Chicago barmaker in July have been 50 per cent ahead of June.

Steelworks operations have made further small gains. The Carnegie Steel Co. ran last week at 56 per cent of ingot capacity and the Mahoning valley at 50 per cent. Finishing mills are doing better in bars, structural shapes, sheets and wire.

Softness still is characteristic of the market in certain finished materials, including sheets, plates, seamless tubes and wide hoops. Sheet bar sales this week definitely put the price at $38 or $2 below the former nominal quotation. The Chicago market, under stress of close competition, has dropped $2 more on plates, shapes and bars. This is unusual in that it brings Chicago bar prices to the same basis as Pittsburgh. Some nut and bolt makers have been withdrawing quotations but the market remains weak. Warehouse prices on steel generally have been reduced $2 to $5 per ton.

It is the softness of steel prices that this week has brought IRON TRADE REVIEW composite of fourteen leading iron and steel products to a new low point of $39.53. Last week it was $39.89.

Tonnage Is Released

Better business is coming from several sources. Automobile production is showing a little pick-up and as inventories have been run down to an almost irreducible limit, more releases of tonnage are coming out both in steel and pig iron. In one case the increase of steel tonnage was 25 per cent. Some of these releases have been made by telegraph, indicating urgency of the need. The Ford Motor Co. has been operating on practically a 5-day basis on sheet supplies. Further pipe line tonnage has been placed by oil companies. The Standard Oil Co. of New Jersey has closed on 100 miles of 8-inch for a domestic line as well as 75 miles of 6-inch for export, representing 12,000 tons. The recent order of the Pan American Petroleum & Transport Co. involving 14,000 tons is a release of a contract first placed some months ago. A gas line, 70 miles of 12-inch, now up at Pittsburgh will require 9240 tons, and another of 17 miles in the East calls for 2200 tons.

Awards At The Top

Headed up by the 25,000 tons for the Philadelphia-Camden bridge and 11,000 tons for Philadelphia subways, the awards of structural steel the past week were the heaviest for any similar period in at least two years, totaling 65,139 tons. In all, 47 projects were placed. New inquiry, however, is not so good.

Some revival of buying interest in track fastenings is shown among the railroads. At Chicago four lines are in the market for over 30,000 kegs of spikes and bolts. Rail business is backward, however, and the rail mill of the leading interest at Chicago is down. New car and locomotive business is slightly better.

Pig iron prices are steady this week under a continuance of fair buying. Producers no longer seem inclined to make concessions where an attractive order is involved and on the contrary, are asking some advances. More foundries are taking in increased shipments.

British mills have taken the order for 45,000 tons of galvanized sheets from the Argentine government for which American producers recently competed. Japan has placed 12,000 tons of thin-gage sheets in this country during the past two weeks. An order for 3000 tons of 70-pound rails for a lumber railroad in Washington has gone to Germany.

British makers of ferromanganese have met the lower price recently made by one domestic producer and the market now is down $2.50 to $105 seaboard.

Basing Case Decided

No disturbance to trade, it is believed, will result from the order issued by the federal trade commission this week, after a procedure extending over four years, that the practice of quoting Pittsburgh base on steel prices must be discontinued within 60 days. Such a rule generally had been expected. The final status of Pittsburgh plus or its modifications, it is clear, will be determined by the courts on questions of law and not of economics. The steel companies will appeal to the highest courts.

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Statistics, Barometers of Trade Changes

CONTINUED recognition of iron and steel statistics as barometric, indicating the approach of changes in business currents, proves the value placed on them by business observers. Recently a statistician and interpreter of business phenomena has found that blast furnace operation furnishes the truest measure of business fluctuation and has adopted this as a guide in his calculations. This indicates the great value of statistics, current quotations of the week and comparative prices published weekly in Iron Trade Review. Knowledge of the past is essential to the correct interpretation of the present and to a clear understanding of the possibilities of the future. Iron Trade Review presents figures relating to every phase of the metalworking industries, and in addition interpretation through the graphs in its Business Trend section.

Do You Know That—

"Steel plant readers of Iron Trade Review independently operate 50 railroads with 17,000 miles of track. 2600 locomotives and 52,000 cars operate on the railroads."

Pig Iron Again Quiet in Pittsburgh but Other Districts Report Fair Sales—Shipments Show Improvement—Prices Steadier

PITTSBURGH, July 22.—Pig iron is in the doldrums again, with no large inquiries and few small ones and few small sales. The trend is thought to be upward, however, with the strength in the scrap market about to be reflected in quotations in some directions. The trade here discounts the report originating in Cincinnati, that Andrews Steel Co., Newport, Ky., bought 20,000 tons of basic iron in this district since the freight rate from Pittsburgh and Midland, Pa., to Newport is $4.28 a ton. A valley producer with a freight of $3.65 to Newport also disclaimed any knowledge of this deal. A seller at Ironton, O., with a freight of $2.27 states that he did not sell, leaving a maker at Portsmouth, O., as the possible seller on a freight rate of $2.27. A valley producer selling an affiliated interest several thousand tons basic last week for delivery over the remainder of this quarter, obtained $19.50, a split of the $19, valley or Johnstown, figures. This price still is available but no inquiries are out now to test this. Bessemer iron is stiffening somewhat with the minimum now available at $20.50, valley, although some $20, Johnstown quotations still are outstanding, carrying the same freight rate from Pittsburgh common points as from the valley. One valley producer is quoting $21, while sheet and tube interests there practically are out of the market with $21.50 quotations. McConway & Torley Co.'s order for 750 tons of bessemer went at $20, Johnstown. Westinghouse Electric & Mfg. Co., bought a small quantity of iron on the same basis. Wheeling Mold & Foundry Co. closed on about 800 tons at a similar level in the Wheeling district. United Engineering & Foundry Co. did not close on its recent inquiry. The Pressed Steel Car Co., wants a small quantity of malleable and although quoted $19.25 and $19.50, valley, expects to buy at a lower figure. One Ohio user bought 100 tons at $19, valley.

Prices Continue Soft

Boston, July 22.—Despite efforts to keep pig iron prices from further decline the market has gradually slipped during the past week and tonnage in hands of furnace interests seems to refute the idea of an advance. New England buying has been decidedly dull and with the exception of a 1000-ton lot has been in small tonnages. A Vermont consumer is in the market for 600 tons of No. 2X (2.25 to 2.75 silicon). Several Massachusetts consumers are inquiring for 200 and 300 ton lots and a few prospective sales are reported in Connecticut. Some Buffalo iron still is obtainable at $18.50 for the base grade, 1.75 to 2.25 silicon. In eastern Pennsylvania No. 2X is readily obtainable at $20 at the furnace or $23.65 delivered. One lot of 200 tons is reported at this price during the past week.

Some Sales in East

New York, July 22.—The Gould Coupler Co. during the past week bought several thousand tons of basic and malleable for its Depew, N. Y., plant. The Burnham Boiler Corp. bought 500 tons of foundry iron for its plant at Elizabeth, N. J. Other sales in this territory probably did not exceed 4000 tons. The volume of inquiry is small. The American Steel & Wire Co. is in the market for copper free low phosphorus iron for its Worcester, Mass., plant. The Buffalo market reflects a slightly firmer tone with most current business going at $19 furnace. Eastern foundry iron continues at $20 to $20.50 base at the nearest furnace.

Abendroth Bros. are inquiring for 4000 tons of foundry iron for fourth quarter delivery. The General Electric Co. is inquiring for 1700 tons for third quarter, mostly No. 1X foundry grade.

Market Activity Limited

Philadelphia, July 22.—A couple of thousand tons of low phosphorus iron were sold here last week. Sales of foundry iron also aggregated several thousand tons made up of various lots. Otherwise the pig iron market here was featureless. New inquiry is small. Prices are unchanged.

Fair Selling at Buffalo

Buffalo, July 22.—Pig iron inquiry is estimated at 7,000 to 10,000 tons, and consists of small and medium sized lots of foundry, malleable and basic. A large percentage of the old inquiry has been covered, sellers say. A Depew consumer is said to have bought about 4000 tons, two local furnaces getting the business, which was basic. No word has been heard on an inquiry of 2000 tons of malleable on which Buffalo furnaces submitted prices and it is thought it has not been placed. There have been no large sales of foundry grades. The Wickwire interest has suspended pig iron production while furnaces are being relined. Operation will be resumed in about six weeks. This cuts production in the district to 6 furnaces with 16 idle. This is the lowest rate of operation in the Buffalo district in recent years. Sellers say $19 is their low price but it is reported that as low as $18.50 has been done within the past 10 days on exceptional tonnage. Whether this price was quoted on new iron or merely on old stocks was not stated definitely. The rule however is to quote nothing less than $19 and to attempt to get differentials. Sales by Buffalo furnaces last week exceeded 12,000 tons.

Shipments Are Increasing

Cleveland, July 22.—A very fair volume of pig iron sales continues to be made by producers with headquarters in this city. Sales so far in July by these producers have been 50 per cent or more of those of June. Included in the week's sales were several thousand tons of malleable on which higher than $19, valley was paid. Producers also are shipping at a heavier rate and one important interest reports that the tonnage it will move in July promises to be the largest of the present year. More tonnage is being released by automobile foundries and some of this has been ordered forward very urgently. Prices are steadier and reflect no change over the previous week. For local delivery $20, furnace base, is named and for outside points, $19, furnace. Other furnaces in this territory are holding at $19 minimum. Cleveland sellers report some sales into Pittsburgh territory on the basis of $19, valley. Some light on the untested basic market may be cast by a new inquiry for 5000 tons for immediate delivery from a northern Ohio consumer. A report that the Andrews Steel Co. placed an order against its inquiry for 25,000 tons of basic with Cleveland furnaces, appears to be unfounded.

Cheaper Iron Disappearing

Chicago, July 22.—Northern foundry and malleable iron are firmer at $20, furnace, and practically all cheaper iron has disappeared from the market. Inquiry is showing no decrease in number, but individual tonnages are somewhat smaller.

A Milwaukee melter is inquiring for 3000 tons of foundry and malleable iron and another Chicago melter is asking for 2000 tons of foundry. A western Illinois melter wants 1400 tons of foundry. Many inquiries are out for from 300 to 500 tons. Shipments of foundry coke indicate a fair rate for foundry operations. Malleable foundries are gaining more in operations than gray iron.

Charcoal iron is unchanged at $26, and the minimum on southern iron still is $18, Birmingham. Activity in both grades is slight.

Better Activity Is Developing

Cincinnati, July 21.—A better situation is developing in the pig iron market, though the improvement still is slow and as represented by actual transactions in the past week, not greatly changed from the week preceding. Sales totaled around 6000 tons by the southern Ohio group. Many buyers are sounding out the market; some users are running out of iron; there are indications of an increase in the melt, which with continued reduction in furnace output is the cause of more hopefulness on the part of sellers.

The Andrews Steel Co., Newport, Ky., is reported to have bought between 20,000 and 25,000 tons of basic for shipment over the remainder of this year. The Dayton Malleable Co., Dayton, O., took 2000 tons of malleable from a furnace at Ironton, O., while the International Harvester Co., closed for 500 tons of malleable with a Cleveland furnace. Other sales include 200 tons of northern foundry to the J. A. Oberhelm Foundry Co., Cincinnati, 100 tons of the same grade to the Advance Foundry Co., Dayton, O., and 150 tons of northern iron to Elmwood Castings Co., Cincinnati. The United States Cast Iron Pipe & Foundry Co. recently bought 1400 tons of off-grade northern iron from an Ironton producer for its Addyston, O., plant. Northern iron for prompt or nearby shipment is holding firm at $19.50, Ironton base, while southern iron is quoted at $18 to $18.50, Birmingham base. Sales of southern iron in this district have been of small consequence.

Much Better at St. Louis

St. Louis, July 21.—A decided turn for the better has featured the pig iron situation in this district the past week or ten days. The psychological change has been brought about by a number of factors, chief among which are improved crop prospects and radical rise in wheat and corn prices. The principal manifestation of greater hopefulness has been a firmer undertone and a broader and more diversified inquiry for pig iron than for a number of weeks. The character of inquiries indicates actual buying. In addition to the more favorable aspect of general business, melters are intrigued by the extensive blowing out of stacks and are disposed to interpret this as meaning that the furnace interests do not propose to accumulate more stock at present production costs and selling price levels.

A number of makers who heretofore had no definite price and were meeting competition, have adopted a definite and positive minimum quotation, below which they declare they will take no business. Northern iron, which earlier in the month was freely offered at $19, has moved up to $19.50. Southern furnaces are also somewhat stiffer in their views, at least two having recently refused orders at figures prevailing the week before.

Actual sales reported total between 6000 and 7000 tons. The leading local producer reported having sold 600 tons of carwheel iron and 1000 tons in various sized lots to other melters, all for prompt delivery. A selling agency disposed of 600 tons to a specialty maker in Quincy. The representative of a Birmingham maker sold 1200 tons, including 500 to a local job foundry. Inquiries for foundry iron totaled about 8000 tons, mainly for prompt shipment and delivery through third quarter. A local steelmaker purchased 500 tons of basic iron, and inquiries were out from two East side mills, one for 2000 to 5000 tons and the other for 3000 to 5000 tons.

Still Dull in South

Birmingham, Ala., July 21.—Dullness continues in the South. The pig iron market is disappointing, sales are in small lots and much below production. At the present rate of delivery unfilled tonnage will soon be wiped out. Quotations are still $18 to $18.50 per ton, with some melters claiming to have purchased at a lower price. The Alabama Co. has followed the lead of the Woodward Iron Co. in readjusting wage scales. Iron reported en route from India, purchased by local pipe interests when the local quotations were above $22, has not arrived.

Prices Present and Past

Representative market figures yesterday, and for last month, three months ago and one year ago

	July 23, 1924	June, 1924	Apr., 1924	July, 1923
PIG IRON				
Bessemer, valley del., Pitts.....	$21.26	23.26	24.61	28.51
Basic, valley	19.00	20.00	21.70	25.15
Basic, eastern del., eastern Pa.	20.50	20.60	21.35	27.25
*No. 2 foundry, del. Pitts.....	20.76	21.26	23.51	27.36
No. 2 foundry, Chicago	20.00	21.40	24.40	28.00
*Southern No. 2, Birmingham..	18.00	20.00	22.20	25.00
*Southern Ohio, No. 2, Ironton	19.50	20.25	23.00	26.50
**No. 2X, Virginia furnace....	24.50	25.50	25.50	27.25
**No. 2X, eastern, del. Phila....	21.76	21.76	23.73	28.00
Malleable, valley	19.00	19.75	22.20	25.50
Malleable, Chicago	20.00	21.40	24.40	28.00
Lake Superior charcoal, Chicago	29.04	29.04	29.04	36.60
Gray forge, val., del. Pittsburgh	20.26	20.76	23.51	27.01
Ferromanganese, del., Pitts....	109.79	112.29	112.29	122.79
SEMIFINISHED MATERIAL				
Sheet bars, bessemer, Pittsburgh	38.00	40.00	42.10	42.50
Sheet bars, open-hearth, Pitts....	38.00	40.00	42.10	42.50
Billets, bessemer, Pittsburgh....	38.00	38.00	40.00	42.50
Billets, open-hearth, Pittsburgh..	38.00	38.00	40.00	42.50
FINISHED MATERIAL				
Steel bars, Pittsburgh.....	2.15	2.20	2.30	2.40
Steel bars, Chicago.....	2.15	2.25	2.41	2.50
Steel bars, Philadelphia.....	2.47	2.52	2.57	2.72

	July 23, 1924	June, 1924	Apr., 1924	July, 1923
FINISHED MATERIAL (Continued)				
Iron bars, Philadelphia	$2.42	2.42	2.47	2.72
Iron bars, Chicago mills.....	2.20	2.24	2.36	2.55
Beams, Pittsburgh	2.15	2.20	2.35	2.50
Beams, Philadelphia	2.32	2.42	2.57	2.82
Beams, Chicago	2.25	2.38	2.51	2.60
Tank plates, Pittsburgh	2.10	2.15	2.35	2.50
Tank plates, Philadelphia.....	2.12	2.27	2.52	2.82
Tank plates, Chicago.....	2.25	2.38	2.51	2.60
Sheets, blk., No. 28 Pittsburgh	3.50	3.65	3.70	3.85
Sheets, blue anl., No. 10, Pitts.	2.70	2.80	2.80	3.00
Sheets, galv., No. 28, Pittsburgh	4.60	4.80	4.85	5.00
Wire nails, Pittsburgh	2.85	2.90	3.00	3.00
COKE				
Connellsville furnace, ovens	2.90	3.15	3.55	4.35
Connellsville foundry, ovens	4.00	4.15	4.60	5.15
OLD MATERIAL				
Heavy melting steel, Pittsburgh.	18.00	16.25	16.60	18.25
Heavy melting steel, eastern Pa.	15.50	15.65	15.35	17.25
Heavy melting steel, Chicago..	15.25	13.55	14.65	17.10
No. 1 wrought, eastern Pa.....	18.25	17.75	18.40	18.85
No. 1 wrought, Chicago.....	15.00	13.25	14.80	16.60
Rails for rolling, Chicago	16.00	14.55	17.10	18.40

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.

Composite Market Average

Representing the Combined Average Prices Per Ton of Fourteen Leading Iron and Steel Products Yesterday, One Week, One Month, Three Months, One Year and Ten Years Ago.

July 23, 1924	July 16, 1924	June, 1924	Apr., 1924	July, 1923	July, 1914
$39.53	$39.89	$40.61	$42.33	$45.39	$22.17

Products Included Are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

Iron and Steel Prices

SCRAP PRICES, PAGE 246; WAREHOUSE, PAGE 242; ORE, NUT, BOLTS AND RIVETS AND PIPE PRICES, PAGE 248

Pig Iron

Prices per gross ton

Bessemer valley	$20.50 to 21.50
Bessemer, Pittsburgh	21.26 to 23.26
Basic, valley	19.00 to 19.50
Basic, Pittsburgh	20.76 to 21.26
Basic, Buffalo	19.00
Basic, del., eastern Pa.	20.50 to 20.75
Malleable, valley	19.00 to 19.50
Malleable, Pittsburgh	20.76 to 21.26
Malleable, Cleveland, del.	20.50
Malleable, Chicago	20.00
Malleable, Buffalo	19.00 to 20.00
Malleable, del., eastern Pa.	21.25 to 22.25

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X East'n and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 to 3.25
No. 1 Chicago	2.25 to 2.75
No. 2 foundry Eastern	1.75 to 2.25

No. 1X, eastern del., Phila.	21.76 to 22.76
No. 1X, Buffalo	19.00 to 20.00
No. 1 foundry, Chicago	20.50
No. 2 foundry, valley	19.00 to 19.50
No. 2 foundry, Pittsburgh	20.76 to 21.26
No. 2 foundry, Buffalo	18.50 to 19.00
No. 2 foundry, Chicago	20.00
No. 2 foundry, Granite City	20.00 to 20.50
No. 2 foundry, Ironton fur.	19.50
No. 2 foundry, Cleveland, del.	20.50
No. 2 foundry, del., Phila.	20.76 to 21.76
No. 2 foundry, N. J. tidewater	21.39 to 22.39
No. 2X, eastern del., Phila.	21.26 to 22.26
No. 2X, east. N. J. tidewater	21.89 to 22.89
No. 2X, eastern del., Boston	23.65 to 24.15
No. 2 X, foundry, Buffalo fur.	19.00 to 19.50
No. 2X, Buffalo, del. Boston	23.91 to 24.41
No. 2 southern, Birmingham	18.00 to 18.50
No. 2 southern, Cincinnati	22.05 to 22.55
No. 2 southern, Philadelphia	25.80 to 26.30
No. 2 southern, Chicago	24.01 to 24.51
No. 2 southern, Cleveland	24.01 to 24.51
No. 2 southern, Boston (rail and water)	24.91 to 25.41
No. 2 southern, St. Louis	23.17 to 23.67
No. 2X, Virginia furnace	24.50
No. 2X, Virginia, Phila.	29.17
No. 2X, Virginia, Jersey City	30.04
No. 2X, Virginia, Boston	30.41
Gray forge, eastern Pa.	20.50 to 21.50
Gray forge, val. del., Pitts.	20.26 to 20.76
Low phos., standard, valley	27.00 to 28.00
Low phos., standard, Phila.	nominal
Low phos., Lebanon, furnace	24.00 to 24.50
†Low phos., English, Phila.	27.26 to 27.76
Charcoal, Birmingham	31.00
Charcoal, Superior Chicago	29.04

Silvery Iron
Jackson County, Ohio, furnace

7 to 8 per cent	29.00
8 to 9 per cent	30.50
9 to 10 per cent	32.50
10 to 11 per cent	34.50
11 to 12 per cent	37.00
12 per cent	39.50

Bessemer Ferrosilicon
Jackson County, Ohio, furnnace

10 to 11 per cent	39.50
11 to 12 per cent	42.00
12 to 13 per cent	44.50

Ferroalloys

†Ferromanganese 78 to 82 per cent, tidewater, or furnace first hand and resale	$105.00
Ferromanganese delivered Pittsburgh	109.79
Spiegeleisen 19 to 21 per cent domestic furnace or tidewater	33.00 to 35.00
†Spiegeleisen, English, delivered tidewater	33.00 to 34.00
Ferrosilicon, 50 per cent contract freight allowed	70.00 to 75.00
Ferrotungsten standard, cents per pound contained	88.00 to 90.00
Ferrochrome, 60 to 70 chromium, 6 to 8 carbon, cents per pound contained, delivered	10.00 to 10.25
Ferrovanadium, 30 to 40 per cent per pound estimated, according to analysis	$3.25 to $3.75
Ferro carbon-titanium, carloads, producer's plant, per net ton	$200.00

†Duty paid.

Coke

Beehive, Ovens

Prices per net ton

Connellsville furnace	$2.90 to 3.00
Connellsville foundry	4.00 to 5.00
New river foundry	8.50 to 9.00
Wise county furnace	3.75 to 4.50
Wise county foundry	4.50 to 5.00
Alabama furnace	5.00 to 5.25
Alabma foundry	5.00 to 5.50

By-Product

Foundry, Newark, N. J., del.	$10.41
Foundry, Chicago, ovens	10.75
Foundry, Boston, delivered	11.50
Foundry, St. Louis	12.00
Foundry, Granite City, Ill.	9.00 to 9.50
Foundry, Alabama	5.50

Semifinished Material

Prices per gross ton

BILLETS AND BLOOMS

4 x 4-inch base

Open-hearth, Pittsburgh	$38.00
Open-hearth, Youngstown	38.00
Open-hearth, Philadelphia	43.17
Open-hearth, Chicago	35.00 to 38.00
Bessemer, Pittsburgh	38.00
Bessemer, Youngstown	38.00
Forging, Pittsburgh	43.00
Forging, Philadelphia	45.17 to 48.17

SHEET BARS

Open-hearth, Pittsburgh	$38.00 to 40.00
Open-hearth, Youngstown	38.00 to 40.00
Bessemer, Pittsburgh	38.00 to 40.00
Bessemer, Youngstown	38.00 to 40.00

SLABS

Pittsburgh	38.00
Youngstown	38.00

WIRE RODS

¼-inch and finer

Wire rods, Pittsburgh	$48.00

Standard extras, $2.50 per ton over ¼-inch; $5 for screw stock; $15 for acid wire rods. Carbon extras, $3 for 0.20 to 0.40; $5 for 0.41 to 0.55; $7.50 for 0.56 to 0.75; $10 over 0.75.

SKELP

Grooved skelp, Pittsburgh	2.05c
Universal skelp, Pittsburgh	2.15c
Sheared skelp, Pittsburgh	2.15c

Shapes, Plates and Bars

Prices per pound

Structural shapes, Pittsburgh	2.15c
Structural shapes, Phila.	2.17c to 2.47c
Structural shapes, New York	2.19c to 2.49c
Structural shapes, Chicago	2.25c
Structural shapes, Birmingham	2.30c to 2.35c
Tank plates, Pittsburgh	2.15c
Tank plates, Philadelphia	2.02c to 2.22c
Tank plates, New York	2.04c to 2.24c
Tank plates, Chicago	2.25c
Tank plates, Birmingham	2.30c to 2.35c
Bars, soft steel, Pittsburgh	2.15c
Bars for cold finishing, Pitts.	2.30c
Bars, soft steel, Philadelphia	2.47c
Bars, soft steel New York	2.49c
Bars, soft steel, Chicago	2.15c
Bars, soft steel, Birmingham	2.30c to 2.35c
Bars, refined iron, Pittsburgh	3.00c to 4.75c
Bars, rail steel, Chicago	2.10c to 2.13c
Bars, rail steel, mill	2.10c to 2.20c
Reinforcing bars, billet, Pitts.	2.15c to 2.20c
Bar iron, common, Phila.	2.42c
Bar iron, common, New York	2.44c
Bar iron, common, Chicago	2.20c
Bars, forging quality, Pitts.	2.40c

Hoops, Bands, Strip

Prices per pound

Hoops, Pittsburgh, under 5 in.	2.60c to 2.75c
Hoops, Pittsburgh, 20 gage, under 1 in.	2.90c to 3.00c
Bands, Pittsburgh	2.60c to 2.75c
Hot rolled strip steel, Pittsburgh stamping quality	2.50c to 2.75c
Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100-inch and heavier, base, Pittsburgh	4.25c to 4.50c

Cold Finished Steel

Prices per pound

Cold finished steel bars, Pittsburgh base, carloads	2.80c
Cold-finished steel bars, base Pittsburgh, less carloads	3.05c
Steel shafting, Pittsburgh	2.80c

Rails, Track Material

Standard bessemer rails, mill	$43.00
Standard open-hearth rails, mill	43.00
Relaying rails, St. Louis	27.00 to 32.50
Relaying rails, Pittsburgh	25.00 to 28.00
Light rails, 25 to 45, mill	1.90c to 2.00c
Angle bars, Chicago base	2.60c
*Spikes, railroad, Pitts	2.80c to 2.90c
*Spikes, small railroad, 7/16-in. and smaller	3.25c
Spikes, boat and barge, Pitts	3.40c
Spikes, railroad, Chicago	2.80c to 3.00c
Track bolts, Pitts. standard	3.75c to 4.00c
Track bolts, Pitts., small	4.50c to 4.75c
Track bolts, Chicago	3.80c to 4.00c
Tie plates, Pittsburgh	2.50c to 2.55c
Tie plates, Chicago	2.45c

Spike, tie plate and truck bolt prices for carlots.

*New list.

Wire Products

To Jobbers in Carloads

Prices per pound

Wire nails, Pittsburgh	2.85c
Galv'd nails, 1-inch and over	5.10c
Plain wire, Pittsburgh	2.60c
Annealed wire, Pittsburgh	2.75c
Galvanized wire, No. 9 gage, Pittsburgh	3.20c
Barbed wire, painted, Pitts.	3.30c
Barbed wire galv., Pitts.	3.65c
Polished staples, Pittsburgh	3.30c
Galvanized Staples, Pittsburgh	3.65c
Coated nails, count keg Pitstburgh	2.25c
Woven wire fencing (retailers)	67½ off
Woven wire fencing (jobbers	70 off

Sheets

SHEET MILL BLACK

Prices per pound

No. 28, open-hearth, Pitts.	3.50c to 3.65c
No. 28, bessemer, Pitts.	3.50c to 3.65c
No. 28, open-hearth, Phila.	3.82c to 3.97c
No. 28, open-hearth, Chicago	3.84c to 3.99c

TIN MILL, BLACK

No. 28,open-hearth, Pitts.	3.50c to 3.65c

GALVANIZED

No. 28, open-hearth, Pitts.	4.60c to 4.80c
No. 28, bessemer, Pittsburgh	4.60c to 4.80c
No. 28, open-hearth, Phila.	4.97c to 5.12c
No. 28, open-hearth, Chicago	5.04c to 5.14c

BLUE ANNEALED

No. 10, open hearth, Pitts.	2.70c to 2.80c
No. 10, bessemer, Pittsburgh	2.70c to 2.80c
No. 10, open-hearth, Phila.	3.02c to 3.12c
No. 10 open-hearth, Chicago	3.09c to 3.14c

AUTOMOBILE SHEETS

No. 22, Pittsburgh	5.10c

Tin Plate

Prices per 100-pound box

Tin plate, coke base, Pitts.	$5.50

Iron and Steel Pipe

Base Discounts Pittsburgh to Jobbers in Carloads

	Black	Galv.
1 to 3-inch, butt steel	62	30½
1 to 1½-inch, butt iron	30	13

Boiler Tubes

Less Carload Discounts—Carloads 4 Points Additional

Steel 3¼ to 3¾-inch	38½
Charcoal iron, 3¼ to 4½-inch	5
Seamless hot rolled, 3⅛ to 3¾-inch	35

Chain, Piling, Cut Nails

Prices per pound

Chain, 1-in. proof coil, Pitts.	6.25c
Sheet piling base, Pittsburgh	2.20c
Cotton ties, bundle 45 lbs. Pittsburgh, delivered prices on application or $1.40, Atlantic seaboard.	
Cut nails, Pittsburgh	2.90c

Cast Iron Water Pipe

Prices per net ton

Class B Pipe

Four-inch, Chicago	$58.20 to 59.20
Six-inch and over, Chicago	52.20 to 54.20
Four-inch, Birmingham	51.00 to 52.00
Six-inch and over Birm'ham	47.00 to 48.00
Four-inch, New York	64.60 to 65.60
Six-inch and over, New York	59.60 to 60.60

Standard fittings, Birmingham, base, $110.00 6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $5 higher than Class B.

Scrap Reacts but Gains

Advance Followed by Recession in West but Market Level Is Higher—Better Movement Evident in All Centers—Higher Prices Expected

SCRAP PRICES, PAGE 246

Chicago, July 22.—Iron and steel scrap prices have reacted from the peak they reached about the middle of last week and as a whole are heavy. Heavy melting steel topped $16 for a day and when a large melter refused to pay $16 it sagged and now seems to have a range of $15.25 to $15.75. Malleable also is weaker, with the top of railroad at $17.50 and agricultural at $17. Dealers and brokers have lost little of their bullishness. Considerable scrap is moving eastward, especially from producing territory east of Chicago where the freight rates east and west are practically on a parity. Scrap, however, has retained a large portion of its recent advance and signs of interest on the part of melters seem certain to impart new strength.

Deadlock in New York

New York, July 22.—While inquiry appears a trifle better, a deadlock continues between consumers and sellers of iron and steel scrap. As a result trading remains at almost the minimum. Sellers look for little real improvement before September but believe that a rise by that time is inevitable and are therefore sitting tight. Some indications prevail of a loosening up. Sales of strictly No. 1 railroad steel, or the equivalent, have been recently made for shipment to Phoenixville, Pa., and Coatesville, at around $16 and $15, delivered, respectively. This is about the equivalent of $15, South Bethlehem, but no sales of railroad steel for the latter point have been made at more than $14.50, delivered. The only price change of the past few days is a rise of about 50 cents a ton in heavy cast scrap, dealers now quoting $13 to $13.50, New York.

Buying Is Scattered

Philadelphia, July 22.—Iron and steel scrap buying is scattered although the total tonnage moving is fair. Prices show little change this week but are firm.

More Activity Is Noted

Pittsburgh, July 22.—That the scrap market is more active is evidenced by various transactions in Pittsburgh, Canton, Massillon, Youngstown and Warren, O. While No. 1 railroad material brought $18.25 from a nearby user, the highest paid for regular heavy melting steel has been $18. The Edgewater Steel Co. was a recent buyer and is understood to be ready to buy more but Midland and Monessen, Pa., consumers are out of the market. Yesterday one dealer turned down an offer of $18.50 for No. 1 railroad steel. Regular heavy melting in Youngstown is firm at $18.50. A steel interest there is seeking some at $19, the figure recently paid by a Warren, O., user. Dealers at Canton are offering $18 and at Massillon, $18.75 recently was done. Publication recently of $18.75 as having been paid by a Canton, O., buyer was an error at a time when $16.50 or $17 was the prevailing figure. A Weirton, W. Va., user consistently refuses to pay above $17 now but is not obtaining appreciable tonnages. A local dealer was able to pick up four carloads at $16.75 yesterday but the trend is higher and dealers today are offering to pay $17.50 delivered Weirton to cover shorts.

Better Demand at Buffalo

Buffalo, July 22.—Demand for heavy melting steel from outside consumers and scarcity of tonnage have given prices a sharp upturn. Dealers who have sought material for delivery to Pittsburgh and valley points have been unable to pick up tonnage below $16 and in some instances $16.50 has been asked by holders. Mills here have been able to purchase some steel within the past week at $15.50 to $16, an advance of $2 a ton over quotations of the early part of July. There is a good inquiry for steel and dealers are in the market but think sellers' ideas are out of line with offers of buyers.

Advance at Cincinnati

Cincinnati, July 21.—Iron and steel scrap has been advanced, not due to increased buying by consumers, but to bring quotations in line with those of the valley and Pittsburgh districts. Heavy melting steel is now quoted at $13 to $13.50 f.o.b. Cincinnati. Desultory buying characterizes the market with dealers furnishing most of the activity. They are buying for stock and at the prices they are paying now will have to obtain considerably more than $13.50 for heavy melting steel to make a profit. Buying on the part of mills across the river and in the Portsmouth, O., district continues on a hand-to-mouth basis.

Is Dull at Detroit

Detroit, July 22.—Iron and steel scrap continues firm. Dealers say consumers are more discriminating in purchases and are not inclined to follow the advance in selected scrap, especially heavy melting steel. There is less demand from dealers and thus far there has been inquiry for only blast furnace scrap while foundry grades are slow.

No Change in South

Birmingham, Ala., July 21.—Iron and steel scrap consumption in the South is showing less activity. Dealers with contracts are being asked to delay delivery. New business is practically nothing and quotations are nominal. Melters of No. 1 cast and stove plate have not been in the market lately.

Heavy Melting Firmer

Boston, July 22.—Considerable cheer is found in the iron and steel scrap situation over an advance in heavy melting steel. This comes as a result of an offer on the part of several Pennsylvania mills to pay $16 to $16.50 delivered which means that local dealers can pay $11 to $11.50. Several round lots have moved into eastern Pennsylvania from the Boston district within the last few days. Other than heavy melting steel the mar-

(*Concluded on Page 207*)

Sheet Bars Still Inactive

Small Sales Made at $38 but Larger Requirements Not Yet Acted On—Semifinished Steel Market Remains Dull

SEMIFINISHED STEEL PRICES, PAGE 191

Pittsburgh, July 22.—Dullness as to inquiries and sales still pervades the semifinished material market. A few small sales of sheets bars are understood to have been arranged at $38, Pittsburgh or Youngstown but some makers still maintain a $40 price. Large producers here agree that the lower figure will probably be the basis for any large transactions to be closed up. One sale of small rerolling billets is noted where the size differential was waived, small billets taking the same base as 4 x 4-inch rerolling billets, $38, Pittsburgh or Youngstown. No new business in forging billets is encountered, although one or two nearby users are specifying against their $43 contracts, such as Westinghouse Electric & Mfg. Co. One or two other local users, one nearby and one at Oil City, are refraining from specifying for a time.

The Universal Steel Co., which would have purchased 5000 or 6000 tons of slabs, both high carbon and low carbon had it been able to develop a price $5 or $7.50 per ton below the going market figure of $38, did not buy. No other slab inquiries are out at present.

Wire rods which have been quotable at $48 to $49, Pittsburgh are now quoted at $48 but single carloads are available and are being bought at that figure. Some nearby users are taking out material due them on contract at the $48 price. Skelp, sheared or universal is quoted at 2.15c, while on grooved a lower price by $2 per ton is available, 2.05c, base Pittsburgh. Some mills still quote 2.15c on this grade. No tonnage inquiries are noted and sales are few. Skelp for boiler tubes is moving slowly.

A user at Niles, O., has closed on 950 or 1000 tons of sheet bars at $38, Youngstown. A user at Canton, O., bought a smaller quantity at a slightly higher figure.

Wire Rods Go At $48

New York, July 22.—Somewhat larger bookings have featured the wire rod market during the past week. This business is going at $48, base Pittsburgh.

Few Contracts Are Placed

Youngstown, O., July 21.—While a few contracts for third quarter sheet bars were placed several weeks ago with one producer here, there is no general movement to place tonnage for this period. Considerable tonnage against last quarter commitments remains to be taken and against these consumers are specifying. Buying, however, is on a hand-to-mouth

basis owing to relative slackness in the sheet market. The price of $40 Youngstown, continues to apply on what few shipments are being made. When third quarter tonnage comes up for action lower than $40 would be done.

Small Sales Continue

Philadelphia, July 22.—Sales of billets are only being made occasionally and then in small lots. This business is on the basis of $38, Pittsburgh, for rerolling billets and $48 for forging steel. Some fair sales of wire rods are being made at $48, Pittsburgh.

More Capacity Put On

Cleveland, July 22.—Two more open-hearth furnaces were put in operation this week by the leading local maker of semifinished material, making three added in the past two weeks. At the present time this producer is operating 10 furnaces out of 14. This increase in production is accounted for by better specifications for sheet bars, billets and slabs. Little new business for third quarter delivery is current against old contracts and for this reason the market is untested. The market hears more of $38, Pittsburgh or Youngstown being done on small lots of sheet bars, offered to prospective buyers.

Tin Plate Orders

Clear Mill Books But Are Not Replaced by New Tonnage

TIN PLATE PRICES, PAGE 191

Pittsburgh, July 22.—Further progress has been made in the discharge of tin plate obligations, without a commensurate increase in new bookings. New business is still limited, although specifications on contracts continue to come in every day or so. Governmental reports on vegetable crops, however, are encouraging and point to more tin plate buying being done soon. These state that more acreage has been devoted to peas and beans than in 1923 and estimates of the yield are correspondingly high. This is encouraging to the tin plate manufacturer and while so far it has not been possible to increase operating schedules and the average is still below 60 per cent, real betterment is expected before fall. The corn and tomato packs both are now expected to be larger than heretofore believed. The price on production tin plate still is unchanged at $5.50 per base box, 100 pounds, Pittsburgh. The McKeesport Tin Plate Co., which had an idle period due to a strike, started up 22 out of 44 mills yesterday morning, having settled its differences with its workmen.

Second-Half Contracting Delayed

Philadelphia, July 22.—Contracting for second half requirements of tin plate has been held up here. Current business is largely for stock. The going quotations are from 4.90c to 5.15c, Pittsburgh.

Tonnage Is No Greater

Youngstown, O., July 22.—Activity in the tin plate market shows little change. Tonnage is being placed right along, but the volume is not sufficient to engage more than 60 per cent of district capacity. Production plate is firm at $5.50 per base box, Pittsburgh, while items out of stock are commanding $5.15 per base box, Pittsburgh.

Coke Is At Dead Center

Production Equals Shipments with Few New Inquiries—Blast Furnaces Generally Out of Market—$3 Price Disappearing at Pittsburgh

COKE PRICES, PAGE 191

Pittsburgh, July 22.—Beehive furnace coke is reaching a dead center. Production is equaling consumption and no new inquiries are appearing. Prices below $3 a ton gradually are disappearing and the minimum spot price now is $2.90. The result is that a restricted tonnage is available for open market disposition. All blast furnaces are out of the market. The arrangement of the Shenango furnace with the Midland Steel Products Co. extends through the third quarter at a price equivalent to $3, Connellsville. A. M. Byers Co. is installing a pig casting machine at Girard and will not blow in its furnace before November. An eastern low phosphorous iron producer defers putting his stack in until the pig iron market rights itself. Widespread demand exists for medium sulphur coke for heating purposes and buyers are anxious to close at recently prevailing figures for the balance of the year. One or two producers are advancing their prices 25 cents a ton to $3.15, quoting only for the balance of the third quarter. Sale of foundry coke is spasmodic, sellers reporting a few carloads each week as usual at $4.50 to $5, although some is available at $4. Premium brands still are bringing as high as $6, box cars. H. W. Johns-Mansville Co. closed on 1000 tons of medium sulphur foundry coke at $3.50.

Production according to the *Connellsville Courier* for the week ended July 12 was 49,750 tons as against 54,240 tons the preceding week, another decline of 5510 tons.

By-Product Coke Lower

Boston, July 22.—The New England price of by-product coke has been marked down to $11.50 delivered from its former level of $12 delivered. Shipments continue moderate, mostly against contract.

Unchanged at New York

New York, July 22.—Trading in foundry coke continues quiet and the market is unchanged. Beehive foundry coke is quoted at $4.50 to $5 Connellsville for spot shipment, while some special brands bring $6. Standard by-product foundry coke continues to be quoted at $10.41 delivered at Newark and other northern New Jersey consuming points.

Prices Seem Firmer

Cincinnati, July 22.—The trend of prices on Wise county and New River foundry coke has been slightly firmer, as the result of more active demand. The minimum on New River foundry coke is $8.50 ovens and the maximum $9. On contracts for later delivery somewhat higher prices are made occasionally. Wise county foundry coke is quoted at $4.50 to $5 ovens. Due to an increased volume of orders, the Turkey Knob Coal & Coke Co., in the New River district will light additional ovens. The company has been operating 50 per cent of its capacity. Demand for domestic coke shows improvement. Furnace coke continues inactive. Carlot buying for prompt delivery is the feature, although the Jackson Iron & Steel Co., Jackson, O., is in the market for its August-September requirements.

Demand Is Better

St. Louis, July 21.—Slight improvement is seen in the demand for domestic coke, and a somewhat better volume of orders from industrial users. Inquiries from water gas manufacturers for balance of the year requirements are beginning to appear, but have not resulted in placing large tonnages. Some purchasing in a small way by the railroads has taken place, but with most of their shops operating at greatly reduced capacity, this outlet is not broad.

There is no change worthy of note in demand from metallurgical users. Curtailed operation of foundries has adversely affected routine current demand from that source, and strong competition is in evidence. Asking prices are unchanged from the end of June but some shading is being done for preferred customers. Stocks on yards of by-product interests are somewhat larger than normal for this time of year.

Market Is Weaker

Birmingham, Ala., July 21.—Coke is moving in less quantity than a few weeks ago. The market is weak and little new business is coming in. Quotations range from $5 to $5.50 per ton. No further curtailment was reported during the past week. Several by-product coke oven plants cannot be shut down because of gas and other contracts. Local oil and gasoline dealers are using great quantities of benzol and industries and municipalities are using by-product gas, so that there must be steady operation of plants. Not much coke is being shipped, in fact less than for nearly two years.

Strip Sales Are Better

STRIP PRICES, PAGE 191

Pittsburgh, July 22.—Orders for hot and cold rolled strip steel are becoming more numerous although users generally are adhering firmly to their policy of covering only immediate needs. Several contracts have been booked for third quarter but makers generally are avoiding such obligations. Several tonnages for automotive purposes recently were released on these contracts. At present cold strips are quoted at 4.25c to 4.50c, base Pittsburgh and hot at 2.50c to 2.75c, base Pittsburgh. Operations are on the same basis, about 40 per cent of capacity.

Hot Strip Business Better

Philadelphia, July 22.—A substantial increase in hot strip business is noted. There are some irregularities in price, but 2.60c, Pittsburgh, is quite firm. Cold strip usually is 4.50c, Pittsburgh, but some concessions of several dollars have been made in special instances.

Bar Market Grows Better

Demand Is Stronger and Prices Seem Settled, Buyers Accepting Present Level—July Bookings Exceed June

BAR PRICES, PAGE 191

Chicago, July 22.—Soft steel bars, considering the bellwether of finished steel lines, continue to show slight but gradual gains in bookings and now that the market appears to have settled to 2.15c, Chicago, consumers are expected to evidence their increased confidence by heavier buying. This improved buying has not been sufficient to increase mill operations but the entire trend strengthens the belief that business has definitely turned its back on further recession. One important producer finds bookings so far in July 50 per cent greater than in the corresponding period of June. A western warehouse interest has just placed 1000 tons mostly bars. The fact that bar bookings for several weeks now have revealed improvement has heartened producers.

Bar iron makers have dipped under 2.20c, Chicago, for attractive business but 2.20c stands for substantially all of the slender volume of business being taken. The East Chicago mill resumed today.

New England Sales Slip

Boston, July 22.—Bar sales in New England during the past week declined slightly compared with the week previous, but sentiment seems more cheerful. The leading mills are holding prices firm at 2.15c, base Pittsburgh, and while some sales at 2.10c are reported the tonnage thus represented is comparatively small.

More Buying in East

New York, July 21.—Steel bar orders have been heavier here during the past week than in some time and numerous lots involving 500 to 1000 tons each are being placed. The market is strong at 2.15c, base Pittsburgh.

Pronounced Improvement Noted

Philadelphia, July 22.—A pronounced improvement in steel bars is noted. Some mills so far in July have booked more than double the tonnage taken in all of June. This movement is due not only to the necessity of replenishing stocks but also to the increased consumption. Prices are firm at 2.15c, Pittsburgh.

Tonnages Better at Pittsburgh

Pittsburgh, July 22.—While specifications for merchant steel bars are slightly more numerous and individual lots are larger by at least 25 per cent over two weeks ago, volume still is lacking. Some pleasing shipping instructions recently have been received from cold bar finishers. One bar maker, however, selling special bars to a concrete bar fabricator received specifications on 5000 or 6000 tons, which is helping out its bar mill schedules greatly. Some bar departments are being operated 30 to 50 per cent of capacity. Users and jobbers generally probably will continue their present rule of covering only absolute needs. Even on small lots the market seems to have settled to 2.15c, Pittsburgh, although possibly preferential customers in certain groups where large tonnages are the rule are able to obtain a slight concession. Refined iron bars are not wanted in large tonnages and operations generally are low. Small lot orders from time to time seem to absorb all requirements. Prices are 3.00c to 4.75c, base Pittsburgh.

Tonnage Is On Increase

Cleveland, July 22.—New tonnage is increasing and needs of buyers apparently are of a more pressing character. Tonnage in bars along with other forms is reported by some mill representatives to have been the best this week since March. Other producers have experienced some increase but not to the same degree. Their tonnage is better than at any time since April. One order of 500 tons of rivet steel for stock was included in the week's business. Steel bar prices are well held at 2.15c, Pittsburgh. The situation in hoops, bands and strips is better defined. On strips 6 inches and over, the bar base of 2.15c, Pittsburgh and perhaps lower, applies. On the intervening sizes down to ordinary hoops and bands, 2.25c to 2.35c, Pittsburgh, is named and on the ordinary band classification, 2.65c to 2.75c, prevails.

Cold Drawn Marked Down

Pittsburgh, July 22.—Passing along the benefit of a recent decline in merchant steel bars to their customers, cold bar finishers as noted last week, quoted 2.80c, base Pittsburgh. A few contracts already have been booked for third quarter on that basis. Some regular customers of the cold finishers here, were eager to close on some large quantities for the quarter at that level and sent in pleasing specifications almost immediately. This has caused operating schedules to mount somewhat in a few cases but the average continues around 35 to 40 per cent. For less than carload quantities, a strong effort is being made in every case to obtain 3.05c, base Pittsburgh, which represents the usual differential for less carload lots.

Hoop Sales Are Small

HOOP PRICES, PAGE 191

Pittsburgh, July 22.—Hoops and bands continue to be sold in small quantities only. Usually these orders and specifications come from automotive interests, although other consuming lines are represented. While as high as 2.75c, base Pittsburgh is quoted, 2.60c is the more usual figure.

Bolt, Nut, Rivet Prices Being Withdrawn

NUT AND BOLT PRICES, PAGE 248

Pittsburgh, July 22.—One or two nut and bolt manufacturers have withdrawn all quotations and the trade believes this is a step toward more stabilized conditions. Various discounts have been quoted and each inquiry apparently was considered on its own merits. Some manufacturers still quote officialy 60 and 20 off on large machine bolts, with other prices in harmony. A few contracts have been booked and occasionally a carload specification is received. This sort of buying is also true of rivets, although less-than-carload lots have been particularly numerous. A few single carloads this week brought 2.50c, base Pittsburgh. Small rivets usually are quoted at 70 and 10 off list.

Shading at New York

New York, July 22.—Although some manufacturers of bolts and nuts have withdrawn prices, the situation generally reflects no change. While the quoted figure on large machine bolts is 60 and 20 off, shading continues in some instances as low as 70 and 5 off. On rivets current prices range from 2.40c to 2.90c, base Pittsburgh.

Railroads Inquire for Spikes

Philadelphia, July 22.—The Pennsylvania and Reading railroads are inquiring for large quantities of track spikes and track bolts. Track spikes appear firm at 2.90c, Pittsburgh, and the higher extras announced last month generally are observed. Large machine bolts range from 60 and 20 off to 70 and 5 off. Rivets are going at 2.50c to 2.90c, Pittsburgh. The Reading is inquiring for a carload of rivets.

Prices Are Rebounding

Chicago, July 22.—Bolt and nut makers in this district see evidences that the bottom has been passed in the matter of price and the withdrawal of their quotations by several eastern makers is encouraging. Decidedly improved demand from the automobile interests is expected about Aug. 15. Last week's bookings were slightly greater than those of the preceding week. As low as 70 off still is being done on large machine bolts. The contract basis for large rivets is 2.90c, although less has been done on immediate, quantity shipments.

Jobbers Reduce

Revisions of $2 to $5 a Ton Shown in Prices in All Districts

WAREHOUSE PRICES, PAGE 242

New York, July 22.—In the most general reduction in some time, virtually all the leading items in the local warehouse market have been reduced from $2 to $5 a ton. Shapes, plates and bars are off $2; black and galvanized sheets, $3; and blue annealed sheets, rounds and cold rolled strip steel, $5. These changes reflect primarily the easier situation at the mills over the past three weeks or so. Trading at the same time is far from brisk, but still is said to be on a par with the rate in June, which was slightly better than in May. The sharp curtailment in mill production is contributing much new business to the warehouses.

Other important items recently reduced include bolts, nuts and rivets. Machine bolts, small and large, are now quoted by one leading warehouse at 90 and 10 off list, as compared with the former price of 60 off; lag screws 65 per cent off, as against 60; hot pressed nuts, per 100 pounds, $3.7[illegible] off, as compared with $3; wrought

washers, per 100 pounds, $4 off, as compared with $3.75; tank rivets, 65 and 10 off, as against 60 and 10; and on structural rivets, $3.75, as against $4. While the list prices on welded pipe are unchanged, a concession of at least five points can be had on practically any item where a sizable quantity is involved.

Buying Generally Slow

Philadelphia, July 22.—Iron and steel warehouses here report a better demand in spots, but buying generally remains slow.

Prices Again Revised Downward

Pittsburgh, July 22.—A further decline of $2 per ton was announced last week by warehouse interests on various steel products, taking bars to 2.90c, plates and shapes to 3.00c, hoops and bands to 3.60c and cold-finished rounds to 3.80c, while cold-finished squares, hexagons and flats went to 4.30c, all base Pittsburgh. Sheared plates, 3/16-inch went to 3.25c; common nails to 3.20c, cement-coated nails 2.80c, smooth, foundry and large head roofing nails, 3.30c and black and galvanized wire 3.20c, base Pittsburgh.

Cincinnati Quotations Down

Cincinnati, July 22.—In conformity with similar action taken in other centers, prices on iron and steel products out of local warehouses were cut $2 per ton last week.

Chicago Prices Again Cut $2

Chicago, July 22.—Warehouse prices on iron and steel at Chicago, St. Louis and the "Twin Cities" have been reduced the second time in five weeks as a result of the drop in the East. A $2 per ton reduction has been announced in bars, plates, shapes, bands, cold-rolled shafting, hoops, sheets, forging bars and billets, $1 in bright basic and black annealed wire, $3 in rivets and light rails and $4 in cement coated nails. This puts bars at Chicago at 3.00c and shapes and plates at 3.10c. Warehouse business has been decreased, if anything, by these reductions.

Quotations Cut $2 to $7

St. Louis, July 21.—Prices of iron and steel products from local warehouses have been reduced from $2 to $7 a ton. Bars have been cut to 3.15c, shapes and plates to 3.25c, and iron bars to 3.15c. Black and galvanized sheets were cut $7 a ton, the former grade dropping from 5.00c to 4.65c, and the latter from 6.00c to 5.65c.

Price Levels Again Lowered

Cleveland, July 22.—Price levels again have been lowered $2 a ton local iron and steel warehouses. Bars plates and shapes, cold finished steel, hoops and bands, all were cut. The prices on the first three products are figured on 2.25c, base Pittsburgh. Although sheet quotations were not changed, the mill situation is weaker and this is expected to be reflected in warehouse prices shortly. Sheet prices were cut several weeks ago. The volume of sales is slightly better, orders being more numerous than last year, but for smaller tonnage.

W. H. Anderson Tool & Supply Co., Detroit, has increased its capital stock from $100,000 to $110,000.

Plate Buying Moderate

Large Tonnages Absent from Market—Philadelphia Only District Showing Improvement—Tank Specifications Better—Shading Prevails

PLATE PRICES, PAGE 191

Philadelphia, July 22.—Plate business in this district has improved materially. Mills generally report larger bookings, hence operations, in all cases, now are 45 per cent or higher. Plates continue the weak spot in the market, in some cases lots as small as 150 tons having been booked at 1.75c, Pittsburgh. The current market is 1.70c to 1.90c, Pittsburgh.

Eastern Volume Is Better

New York, July 22.—The volume of plate business in this territory is somewhat better. A number of orders have been entered involving over 500 tons each and the orders for smaller tonnages have been more numerous. This business has been attended by severe price competition and the bottom of the market has declined from 1.80c to 1.70c base Pittsburgh on tank plates. In some cases there has been severe slashing of extras on special quality plates. Some of the business continues to bring 1.90c to 2.00c, base Pittsburgh.

The Standard Oil Co. of New Jersey, which was negotiating for approximately 1700 tons of oil tank work, probably will not close on this business immediately.

James McNeil & Bros. Co., Pittsburgh, have booked the contract for building 3000 feet of 42-inch riveted pipe line at Providence.

New Tonnage Is Limited

Pittsburgh, July 22.—Moderate buying of plates is still the rule with no particularly outstanding individual tonnage reaching the mills. Some Mahoning valley makers are not able to sustain plate mill operations at as high as 50 per cent of capacity; some plate mills in this district and further east are on a 40 to 50 per cent basis. Some liberal specifications have been received recently by the mills on tank plates but boiler and barge material business is scarce. Orders for plates used in ordinary building construction are confined to limited tonnages. A few water tank orders received recently involve 35 to 50 tons each. Plates are quoted at 2.15c, base Pittsburgh, but this is subject to considerable shading depending on the territory.

Market Shows Much Softness

Cleveland, July 22.—Larger tonnages still are absent from the plate market though the run of ordinary orders keeps up to a better volume. One inquiry for oil stills involving a fair tonnage is current. For five switching locomotives for the New York Central, placed in this district, about 250 tons of plates will be required. Plate prices remain exceedingly soft. While 2.15c, Pittsburgh, is the open figure, down to 2.00c is being done as the order is attractive. Lower than 2.00c, base Pittsburgh, is understood to have been made this week on a lot of plates for locomotive use where the extras were especially large.

Tanks Still Hanging Fire

Chicago, July 22.—Demand for plates continues extremely light, correspondingly less than that for bars or shapes, and mills see no heavier schedules in sight until some of the pending oil storage tank business is placed. The railroad car builders see no improvement in the immediate future and this outlet for plates is closed. The plate price has weakened until 2.25c, Chicago, about represents the market.

Lower Wire Level

Stimulates Some Buying, and Improvement Is Seen in West

WIRE PRICES, PAGE 191

Pittsburgh, July 22.—For more than two weeks past, wire products makers have been meeting competitive figures preceding the formal decline of $1 per ton noted in last week's IRON TRADE REVIEW. The movement to 2.60c, on plain wire and to 2.85c, base Pittsburgh on wire nails failed to stimulate much buying from local mills. One independent maker here whose salesmen return to the road after a three weeks' absence expects an upturn in its bookings this week. Earlier in the month fencing discount was increased 2½ points, a price decline of $5 per ton, the discount to jobbers now being 70 off and to retailers 67½ off. This was done to encourage buying of fencing but because the regular 60-day terms have been reinstated and the long datings discontinued, nothing much is being done. Jobbers state they would really be more interested in a continuance of special terms than they are in the price decline. Cement-coated nails are firmer at 2.25c, base Pittsburgh.

Much Improvement Is Evident

Chicago, July 22.—Due partially to the recent reduction in quotations, wire and wire products demand has improved notably and makers believe even greater improvement is in sight. Jobbers not only are buying for current requirements but a little farther ahead. Manufacturing lines also are in better demand. Coal mines are taking more electrical wire and similar products. Stocks are so large that an increase in production is not yet warranted. Local makers are quoting 2.60c to 2.65c, Pittsburgh, on plain wire and 2.85c to 2.90c on wire nails.

Commerce Commission Not To Touch Scrap Case

Washington, July 22.—The interstate commerce commission has declined to intervene in the scrap contract between the McKinney Steel Co., Cleveland, and the New York Centrail railroad. The price stipulated was about $1 above the average weekly published quotations. The contract entered into in December, 1923, stipulated that the McKinney company would handle practically 90 per cent of the scrap tonnage of the New York Central, amounting to about 10,000 tons per month. The price to be paid was to be based on current quotations in the iron and steel market publications.

Concrete Bars Are Duller

Slumping of Awards and Inquiries Regarded as Temporary—Road Work Still the Leading Consumer in Many Districts

REINFORCING BAR PRICES, PAGE 191

Cleveland, July 22.—An encouraging number of small projects requiring reinforcing concrete bars is reported by a few dealers. Most interests report a dearth of active business and no large tonnages are being placed. Concrete Steel Co. took 60 tons for miscellaneous state highway bridges. Walsh Construction Co. was awarded the general contract for the Union Terminal retaining wall taking about 300 tons for the first unit, but it is a question whether the steel work will go ahead at once. Price competition is not as keen as it has been, due largely to the unattractive tonnages pending. New billet bars are being quoted at 2.15c to 2.20c, Pittsburgh, with most of the tonnage going at the latter figure. Rail steel bars are untested at 2.00c to 2.10c mill, although 1.90c still is obtainable on attractive tonnages. Dealers are basing quotations on 2.45c to 2.55c, Pittsburgh.

Lettings Are Exceedingly Small

New York, July 22.—While several projects are under negotiation, actual lettings of concrete reinforcing bars in this general territory are exceedingly small and comprise mostly scattered tonnages. The market on concrete bars for mill shipment continues 2.15c to 2.20c, base Pittsburgh, but lower prices have been making their appearance.

Road Work Only Activity

Buffalo, July 22.—Road builders are providing the only activity in the reinforcing bar market. They are buying lots ranging up to 100 tons and pending contracts indicate there will be a good demand until late summer.

Road Contracts Feature Market

Pittsburgh, July 22.—State road lettings involve a fairly large tonnage of reinforcing concrete bars. Last week, the Truscon Steel Co., and the Kalman Steel Co. obtained Pennsylvania state highway commission awards of 315 and 480 tons, respectively. About 2000 tons are scheduled for placement during this week. Inquiries for concrete bars for industrial buildings are scarce except those involving less than 50 tons apiece. One inquiry is out for 250 tons for the Woodville Insane Asylum; bids close Aug. 1. Mill prices have firmed up a trifle and it now is difficult to locate anything below 2.20c, base Pittsburgh, although one interest still is quoting 2.15c, base Pittsburgh on an accasional inquiry. The warehouse price is 2.35c base Pittsburgh. Some concrete bar fabricators recently sent large specifications to the mills for warehouse stocks.

Little Inquiry Active

Cincinnati, July 22.—Little inquiry developed last week for reinforcing concrete bars. Most of the fresh projects under consideration entail meager tonnages. Sellers in some cases are free to entertain tonnages for reasonably prompt delivery and are doing so whenever the requirement proves attractive. Demand still is restrained by reason of new projects being held in subjection. Bids have gone in on the new law building, University of Cincinnati, which will require 200 tons. Bars out of stock are going at 3.30c, Cincinnati warehouse.

Many Tonnages Are Near Closing

Chicago, July 22.—General contractors' bids are in on the Twenty-third street viaduct for the South Park commissioners and the 700 tons of reinforcing bars should be placed shortly. The Hotel Sherman addition, requiring approximately 500 tons of bars, is again up for figures. The 250 tons of bars in the Lumber Exchange building and the 200 tons in Grand Trunk railroad work at Battle Creek, Mich, also are near letting. Estimating departments were busier last week, but the general trend in new construction is slightly downward. Some recent jobs have gone for 2.30c, Chicago, and the reinforcing bar market is now most aptly described by a range of 2.30c to 2.40c, Chicago, with the latter figure applying on small work.

CONCRETE CONTRACTS PLACED

Awards this week	2,120 tons
Awards last week	8,822 tons
Awards two weeks ago	4,103 tons

480 tons, Pennsylvania state road work, to the Kalman Steel Co.
315 tons, Pennsylvania state road work, to the Truscon Steel Co.
300 tons, road work, equally divided between Illinois and Missouri, to Olney J. Dean & Co.
300 tons, Frindley filtration plant, Minneapolis, to the C. A. P. Turner Co.
155 tons, Elks club, Santa Rosa, Cal., to W. S. Wetenhall Co.
140 tons, building for the United States Metals Refining Co., Carteret, N. J., to Jones & Laughlin Steel Corp.
125 tons, Chicago plant for J. W Diersdorf, Chicago, to the American System of Reinforcing.
105 tons, building for Sawyer Amusement Co., Chicago, to Olney J. Dean & Co.
100 tons, Knights of Columbus clubhouse, Green Bay, Wis., to the Concrete Engineering Co.
100 tons, Marneau apartment building, Milwaukee, to the American System of Reinforcing.

CONCRETE CONTRACTS PENDING

2000 tons, Pennsylvania state road work; awards expected this week.
300 tons, first unit, retaining wall, Union Terminal project, Cleveland; Walsh Construction Co., that city awarded general contract. Steel work may not go ahead at once.
300 tons, Hotel Wausau, Wausau, Wis.; bids to be taken on July 25 by Holabird & Roche, 104 South Michigan avenue, Chicago.
250 tons, Woodville Insane Asylum, Pittsburgh; bids close Aug. 1.
200 tons, law building, University of Cincinnati, Cincinnati; bids in.
Tonnage unstated, 12-story apartment in Chicago, for which Harold E. Gallup, 646 North Michigan avenue, Chicago, is drawing plans.
Tonnage unstated, 10-story office and light manufacturing building for Edward Keogh Printing Co., 525 South Dearborn street, Chicago; architect not yet selected.

Large Pipe Lines Placed

Standard Oil Co. Closes on 12,000 Tons and Pan American Co. on 14,000 Tons—350-Mile Line Still Pending—Cast Iron Demand Lighter

PIPE PRICES, PAGE 191 AND 248

New York, July 22.—The Standard Oil Co. of New Jersey has placed 100 miles of 8-inch pipe for a domestic pipe line and 75 miles of 6-inch for export. These two orders involve about 12,000 tons. The Pan-American Petroleum & Transport Co. placed 140 miles of 10-inch line pipe, 14,000 tons, the business going to the United States Steel Products Co. The Andean National Corp., 342 Madison avenue, New York, is inquiring for 350 miles of 10-inch line pipe and 15 miles of 10-inch extra heavy pipe for Colombia, South America, but there is no indication as to when the latter business will be placed. There is no basis for the report that the International Petroleum Co. was in the market for a tonnage of line pipe. This interest had been reported as seeking 40,000 tons for Colombia.

The Foundation Co., 120 Liberty street, New York, has booked a contract to build 17 miles of 12-inch high pressure gas pipe line from Troy to Schenectady, involving 2200 tons.

Sellers of cast iron pipe look for the local water department to enter the market for a substantial tonnage sometime during August. At the moment, the department has about 120 tons of pipe pending, on which contractors' bids were closed July 18. Municipal demand generally remains slack, with private inquiry the mainstay of the market. This later is not of the volume it was.

Small Buying Predominates

Chicago, July 22.—Cast iron pipe makers are getting a good run of small business, and municipalities are increasingly more active in placing their fall requirements. Among jobs which are about to be closed are Springfield, Ill., 130 tons; Minneapolis, 1500 tons; St. Paul, 600 tons; Watertown, Wis., 115 tons; Blissfield, Mich., 850 tons; Schleswig, Iowa, 110 tons; and Emporia, Kan., which has $15,000 available for mains extensions. Akron, O., will shortly place about 6 miles of 6 and 12-inch pipe. Four-inch pipe continues $58.20 to $59.20, Chicago, and 6-inch and over $52.20 to $54.20, Chicago.

Large Line Pipe Orders Help

Pittsburgh, July 22.—Recent line pipe orders involving fairly large tonnage help to maintain mill operations from 60 to 65 per cent but these orders have been widely distributed. A local independent mill obtained a fair sized 8-inch line; a Youngstown, O., received a 6-inch line about 85 miles long for export and the National Tube Co. received one or two larger lines from its regular customers, although the one credited to it, about 140 miles of 8 and 10-inch for installation in California for the Pan American Petroleum & Transport Co., means no new business since the order was placed a year ago and has just been revived. The Manufacturers' Light & Heat Co., Pittsburgh, will extend its present pipe line system in Wetzel county, W. Va., to the more recently developed natural gas fields in Roane county, W. Va. The extension will re-

quire 70 miles of 12-inch pipe, about 9240 tons and will cost about $1,500,000; the contract has been let to a large pipe maker here. Action has not been taken on the two or three export inquiries for line pipe current in the East; one for the Argentine government and one for Colombia, South America, variously estimated to involve 30,000 to 45,000 tons. These probably will be placed this month. Card discounts of April, 1923, still prevail, although large lines are understood to be subject to some concession.

In boiler tubes, a strictly competitive condition exists so that published discounts mean little. While the April, 1923, discounts still are official quotations, inquiries develop individual prices and concessions as much as four extra discounts of 5 per cent each or about $20 per ton have been granted. Buying is limited and operations accordingly restricted.

Third Quarter Activity Assured

Birmingham, Ala., July 21.—Cast iron pipe makers still are receiving some good orders. Conditions are far from being as active as they were a few months ago but third quarter activity is assured. Production is showing an increase. Delivery equals production and little pipe is in stock.

CAST IRON PIPE PLACED

800 tons, city of Los Angeles, to Llewellyn Iron Works, Lacy Mfg. Co., and Western Pipe & Steel Co.

393 tons, 20-inch class B pipe for Los Angeles to United States Cast Iron Pipe & Foundry Co.

200 tons, 4 to 18-inch class B pipe for Alahambra, Cal., and 75 tons of 4 and 8-inch class B pipe for Placerville, Cal., to National Cast Iron Pipe Co.

180 tons, Toronto, O., to James B. Clow & Sons.

100 tons, gas works at Jackson, Mich., to the National Cast Iron Pipe Co.

100 tons, Iowa State college, Ames, Iowa, to the National Cast Iron Pipe Co.

CAST IRON PIPE PENDING

6000 to 7000 tons, cast iron pipe for 11 improvement projects for city of Seattle; bids called for various dates within the next 30 days.

500 tons, 4 to 12-inch class B pipe for Oceanside, Cal.; bids opened July 9; no award as yet.

41,750 feet of galvanized wrought iron pipe, from ½ to 6 inch for city of Seattle; bids July 18.

Steel Barrel Production Gains in 1923

Washington, July 22.—Production of steel barrels, drums and tanks in 1923, were valued at $22,714,824, as compared with $14,386,557 in 1921, according to the department of commerce. Thirty-eight establishments were engaged in that industry in 1923 as compared with 31 in 1921. In 1923, 3160 persons were employed as compared with 2449 in 1921. The total value of products in 1923 was $23,243,339 as compared with $14,525,010. These totals include all products manufactured by the establishments reporting.

Install New Open Hearth

Philadelphia, July 22.—The Penn Seaboard Steel Corp. announces the installation of a 50-ton open-hearth furnace at its Baldt works, New Castle, Del. This is one of three open-hearths to be built by the company. Business suspended on account of the slump in the automotive industry now is being released, according to officials, enabling the company to light another open-hearth furnace at New Castle.

Sheet Outlook Brighter

More Releases Come from Automobile Builders—Other Orders Slightly Better—Leading Interest Booking 63 Per Cent—Prices Are Soft

SHEET PRICES, PAGE 191

Pittsburgh, July 22.—Order receipts in sheets are growing and with them, the spirits of producers. While so far operating schedules have not been increased, it is expected this soon will be possible. Some automobile companies have been running their stocks so low they have to order in sheets by telegraph. One order for about 800 tons was received here by one maker last week. The Ford Motor Co. is a case in point, where material stocks for only 8½ days ahead are maintained. Since it requires from three to four days to transport steel from Pittsburgh to Detroit, it really is on a 5-day stock basis. In the event of the transportation situation becoming tightened by large grain shipments from the West and from other causes, affecting box cars, it is possible that some of the automobile builders may experience trouble over supplies.

Various automobile interests have been ordering full finished sheets which remain firm at 5.10c, Pittsburgh, on the part of all producers. In galvanized, one or two interests report that more tonnage than any other grade is being ordered. In some cases as low as 4.60c has been quoted and some independents are openly naming 4.70c. Still the American Sheet & Tin Plate Co. continues to book tonnages at 4.80c. Tracing reports of 4.50c on galvanized, it is learned that level was quoted on some seconds. Some blue annealed sheets for railroad car work are being booked. One order calling for 1500 tons or more included one lot of about 800 tons of a size. The leading interest still is quoting and selling blue annealed at 2.80c, while around 2.70c is available in the open market. The American company reports orders last week represented about 63 per cent of normal producing capacity for a week and for the month to date, bookings have been equal to 60 per cent of capacity. These bookings include some black sheets at 3.65c, despite the fact that some small independent makers in Ohio and West Virginia are quoting as low as 3.50c. Recent additional bookings by the leading interest of thin gage black sheets for Japan take its total in the neighborhood of 12,000 tons in two weeks. A few other export orders are noted, usually for small amounts. Operations continue to average about 40 per cent.

Considerable Shading Being Done

New York, July 22.—Shading continues to characterize the sheet market. On attractive lots of black sheets the usual price now is 3.50c, base Pittsburgh. On galvanized sheets the market ranges from 4.60c to 4.70c, base Pittsburgh. On blue annealed sheets the usual prices are 2.70c to 2.80c base Pittsburgh, although 2.65c is being done in some cases.

Improvement Is Continuing

Chicago, July 22.—Bookings of steel sheets again reveal some improvement and while the efforts to obtain new business have not been slackened, mill schedules now are better than they have been in many weeks. Low prices for sheets continue to make their appearance from time to time but the desire to obtain business regardless of price is not so keen. The range appears to be 4.70c to 4.80c, Pittsburgh, on galvanized, 3.60c to 3.65c on black and 2.75c to 2.80c on blue annealed.

Some Improvement Appears

Philadelphia, July 22.—New business in sheets in this territory shows some increase in volume. Galvanized sheets continue to be quoted from 4.60c to 4.75c, base Pittsburgh, black, 3.60c to 3.65c and blue annealed from 2.70c to 2.80c, base Pittsburgh.

Conditions More Promising

Youngstown, July 22.—Sheet mill schedules this week are on a broader basis than last, 48 per cent of capacity being engaged. Whether this rate of activity will be sustained is a matter of conjecture although indications in this connection are favorable. Conditions in the Detroit district appear to be straightening around. Numerous consumers of high-grade sheets have completed taking inventory and the general belief is that more tonnage will come out. Further releases of held-up tonnage have been made by various high-grade consumers so that mill floors now are about cleaned of delayed shipments. From the standpoint of new business, therefore, conditions for August appear more promising. Despite recent slackness in the high-grade sheet market there has been no weakening from the full price of 5.15c, for No. 22 gage, Pittsburgh.

While some producers of common sheets hold the market without change, others give expression to a slight betterment. Generally speaking a better tone exists. Some mills this week noticed expansion in inquiry and while little increase is apparent in bookings, sufficient business is on hand to support a 48-per cent operating schedule for the district. Competition usually exists in a draggy market and present trading is no exception. The black market generally has settled to 3.50c base Pittsburgh, although the spread of 3.50c to 3.60c continues to apply in this district. An inquiry for 1400 tons of barrel stock recently was received here from a St. Louis consumer who was willing to place the tonnage at 3.50c, base Pittsburgh. This figure was quoted but at the moment no action has been taken. Galvanized tonnage is in lighter demand than black. This grade generally is quotable at 4.60c, base Pittsburgh. Since delivery of some tonnage is being made up to 4.70c, base Pittsburgh, the range from 4.60c to 4.70c still is current.

On Four-day Schedule

Orders were posted by the Reading Co., at its railroad shops at Reading, Pa., July 17, placing all shopmen on four 8-hour days per week. The schedule had been five days a week.

Place Large Shape Orders

Philadelphia River Bridge Approaches Take 25,000 Tons and Subway Tentatively 10,000 Tons—Small Awards Numerous—Inquiries Fewer

STRUCTURAL SHAPE PRICES, PAGE 191

New York, July 22.—Featured by the award of 25,000 tons for the approaches to the Philadelphia-Camden bridge, Philadelphia, to American Bridge Co., the structural market in the East was more active last week than for a long time. Prices continue weak, with shapes going at around 2.00c to 2.15c, Pittsburgh, on the general run of work, and less on especially desirable tonnage. Quotations on fabricated material also are unsettled, although not to the extent that prevails on shapes, as the fabricating shops relatively are in much better position. Virtually all of the leading fabricators are booked two to three months, and in some few instances beyond.

On a lot of 1500 tons for the Spartanburg, S. C., shops of the Southern railroad, less than $80, delivered, was done, and a lesser figure is said to have been received by the contractor in charge of the erection of the Dennis hotel addition at Atlantic City, requiring 2000 tons.

Work Slow To Develop

Boston, July 22.—While the amount of work tentatively before New England fabricators shows heavy total tonnage most of the projects are being held up and actual awards have been small. The total during the past week is somewhat less than for the previous week. Two large jobs before the trade, the Boston Five Cents Savings Bank and the new distributing plant for Ford Motor Co., are active and specifications are looked for daily. The Eastern Bridge Co. during the week obtained an order for 500 tons for a hotel at Salem, Mass. Plain material is held by the leading producers at 2.15c, base Pittsburgh, but 2.10c frequently is heard and one or two sales at 2.00c are reported. Plates are obtainable at 1.80c base Pittsburgh.

Demand Materially Improved

Philadelphia, July 22.—Structural shape demand materially has improved in July. Business so far this month already is exceeding that for the entire month of June. Bookings are due largely to the extent to which fabricators and warehouses had depleted their stocks. Indications are that structural lettings will continue good. Lower prices have been done and 1.90c, Pittsburgh, has been shaded on large lots. The general market continues 1.90c to 2.15c, Pittsburgh.

Bookings All Are Small

Buffalo, July 22.—Bookings of local fabricators have been confined to lots of 100 tons or less, but the aggregate of new business is substantial. In addition to the small lots placed it is understood Bethlehem Steel Corp.'s Lackawanna plant here will produce a large tonnage of sheet piling booked from some outside plant. It is also possible the fabrication of a 2000 ton structural order for a Utica contract may be assigned to a Buffalo plant.

Fabricating Shops Without Tonnage

Pittsburgh, July 22.—Several fabricators stated frankly this week they were without a single award, large or small; others cited several small lots 25 to 50 tons apiece. Competition still is keen on every job that comes up for attention and material fabricated and erected for certain jobs brought no higher than $80 per ton. Practically no local inquiries are worthy of note at the moment but the Shrine temple at New Castle, Pa., is expected to require about 1000 tons; it is probable the $600,000 high school building at Morgantown, W. Va., will require about 500 tons; bids on which are about to be asked. Civic and state authorities promise early action on numerous city and county bridges which will require a total of between 5000 and 10,000 tons of steel. Plain shapes are quoted at 2.15c, base Pittsburgh.

Few Large Contracts Placed

Cincinnati, July 22.—Small tonnage lots of structural shapes continue to constitute the greater portion of that market in this territory. The Jones & Laughlin Steel Corp., reports the sale of 400 tons to a bridge building company at Louisville, Ky. The 1500 tons for the new Third National Bank building, Dayton, O., has been awarded to the McClintic-Marshall Co. Enough small lots are being placed to book local fabricators from one to four weeks ahead, although a few are feeling the usual summer dullness. Plain material prices are being shaded, 2.15c Pittsburgh being the prevailing quotation.

Market Temporarily Dull

Cleveland, July 22.—Temporary dullness existed last week in the structural market. Although a few small tonnages were placed, no general buying was done, and several fabricators report a blank week as far as bookings are concerned. H. K. Ferguson Co., engineer, has placed 500 tons for a plant in Birmingham, Ala., with the Virginia Bridge & Iron Co. Although many local fabricators bid on this project, little interest was taken because of freight charges. Plain material prices continue steady at 2.15c, Pittsburgh.

Market Down to 2.25c

Chicago, July 22.—The 2.35c price on plain structural material appears to be fast disappearing and 2.25c, Chicago, now apparently is the market. Considerable business, including four theaters, each of which will require 700 tons or more, is in prospect but awards in the past week have been small in the aggregate. An indication of the local building market is found in the decision of the University of Chicago to go ahead with an expansion program involving more than $7,000,000; the university has not done any building since 1915 on account of the high cost of construction. Building permits for the first 20 days of July have exceeded the first 20 days of last July.

STRUCTURAL CONTRACTS PLACED

Building awards this week.....	65,139 tons
Building awards last week.....	13,792 tons
Building awards two weeks ago....	9,749 tons

25,000 tons, approaches for Delaware River bridge, Philadelphia, to American Bridge Co.

10,000 tons, subway extension, Philadelphia, reported placed through the Keystone State Construction Co., general contractor, with the McClintic-Marshall Co.

5000 tons, Union League club, Chicago, to American Bridge Co.

2700 tons, bridges over Chesapeake river and Delaware canal, to Phoenix Bridge Co.

2000 tons, apartment at Nineteenth and Walnut streets, Philadelphia, to American Bridge Co.

2000 tons, addition to Hotel Dennis, Atlantic City, N. J., to Bethlehem Steel Co.

2000 tons, plant for Utica Gas & Electric Co., Utica, N. Y., reported awarded to American Bridge Co.

1500 tons, Third National Bank building, Dayton, O., to McClintic-Marshall Co.

1500 tons, shops for the Southern railroad, Spartanburg, S. C., to the Virginia Bridge & Iron Co., through Dwight P. Robinson & Co., Inc., 71 Broadway, New York.

1300 tons, ore handling equipment for the Chateaugay Ore & Iron Co., Lion Mountain, N. Y., to Bethlehem Fabricators, Inc.

1000 tons, trusses and columns for the Bronx market house, New York, sublet by the Hay Foundry & Iron Works, to the McClintic-Marshall Co.

1000 tons, coal breaker at Shamokin, Pa., to McClintic-Marshall Co.

839 tons, West Wilshire office building at Los Angeles for the Southern California Telephone Co. to the Baker Iron Works.

800 tons, 3/16-inch plates for pipe line, city of Los Angeles, Cal., to Llewellyn Iron Works, Lacy Mfg. Co., and Western Pipe & Steel Co., jointly.

700 tons, hospital, Morris Plains, N. J., to the American Bridge Co.

600 tons, hotel at Pocono Manor, Pa., to McClintic-Marshall Co.

600 tons, hotel, Durham, N. C., to Dietrich Bros.

600 tons, J. E. R. Carpenter apartment, 145 East Seventy-third street, New York, to the Paterson Bridge Co.

500 tons, junior high school, Trenton, N. J., to American Bridge Co.

500 tons, school, Lowville, N. Y., to McClintic-Marshall Co.

500 tons, hotel at Salem, Mass., to Eastern Bridge Co.

500 tons, plant for Continental Gin Co., Birmingham, Ala., to Virginia Bridge & Iron Co., through H. K. Ferguson Co., Cleveland, engineer and architect.

400 tons, additional work for Buckeye Steel Castings Co., Columbus, O., to Mt. Vernon Bridge Co.

400 tons, bridges for the Norfolk & Western to the Virginia Bridge & Iron Co.

400 tons, repair shops for the Southern railway at Norfolk, Va., to Bethlehem Fabricators, Inc., through Dwight P. Robinson, New York.

400 tons, coal breaker, Luzerne county, Pa., to McClintic-Marshall Co.

380 tons, building for the University of Chicago, Chicago, to Midland Steel Products Co.

300 tons, coal dock for Ley Co., Boston, to Worden-Allen Co.

300 tons, addition to Rhode Island Malleable Iron Co., Hillsgrove, R. I., to J. H. Tower Iron Works.

250 tons, Rosemary theater, Ocean Park, Cal., to Minneapolis Steel & Machinery Co.

250 tons, freight house for the Norfolk & Western railroad, Bluefield, Va., to an unnamed fabricator.

200 tons, bank, Glassville, Pa., to Jones & Laughlin Steel Corp.

200 tons, plant for Hooker-Bassett Furniture Co., Martinsville, Va., to Carolina Steel & Iron Co.

180 tons, bridge work near Port Angeles, Wash., for the United States bureau of public roads, to the Wallace Equipment Co.

170 tons, school at Nineteenth and Wharton streets, Philadelphia, to McClintic-Marshall Co.

152 tons, bridge in Whatcom county, Washington, to the Illinois Steel Bridge Co.

150 tons, transfer bridge for Western Pacific railroad at Oakland, Cal., to the Moore Shipbuilding Co.

150 tons, building for Knights of Columbus, Cleveland, to Republic Structural Iron Works.

150 tons, American Can Co. plant, San Francisco, to Dyer Bros. Golden West Iron Works.

150 tons, substation for L. E. Meyers Co., Aetna, Ind., to Worden-Allen Co.

118 tons, ice house for Polar Wave Ice & Fuel Co., St. Louis, to the Missouri Bridge & Iron Co.

100 to 300 tons, Mountaineer hotel, Huntington, W. Va., to James J. Weiler & Sons.

100 tons, Oswego Boiler Works, Oswego, N. Y., to Bancroft-Jones Corp.

100 tons, head frame for mine at Wakefield, Mich., of Pickands, Mather & Co., Cleveland, to unnamed fabricator.

100 tons, repairs to shops at Conneaut, O.,

for the Nickel Plate railroad, to Erie Steel Construction Co.
Tonnage unstated, 2-story plant for Champion Fibre Co., Canton, N. C., to Converse Bridge & Iron Co.
Tonnage unstated, plates and shapes, 100,000-gallon tank and tower for port commission at Houston, Tex., E. A. Tucker, chief engineer, to Pittsburgh-Des Moines Steel Co.

STRUCTURAL CONTRACTS PENDING

10,000 tons, various city and country bridges, Pittsburgh and vicinity; bids to be asked soon.
1000 tons, Shrine temple, New Castle, Pa.; bids being asked. Will probably be let about Sept. 1.
800 tons, Jewish synagogue, Lake street, San Francisco; bids in.
700 to 1900 tons, government storehouse, San Francisco; bids in.
700 tons, power house, at Holtwood, Pa., for the Consolidated Gas Electric Light & Power Co., Baltimore; bids in.
600 tons, apartment, West Seventy-fifth street, New York; pending.
565 tons, Cushman dam project, Tacoma, Wash.; bids in.
550 tons, Eagle temple, Seattle; plans being revised.
500 to 5000 tons, Magnolia bridge, Seattle; improvement contemplated.
500 tons, Pennsylvania railroad bridge, Philadelphia; bids asked.
500 tons, Morgantown, W. Va., high school; bids about to be asked.
321 tons, Wishkah bridge, Aberdeen, Wash.; bids July 30.
300 tons, power house for the Erie railroad at Jersey City, N. J.; bids asked.
300 tons, New Jersey state highway bridge; pending.
225 tons, bridge for Nickel Plate railroad over Rocky river, Cleveland; bids in.
200 tons, Boston Elevated garage, Boston; bids being taken.
200 to 250 tons, building for F. W. Woolworth Co., Thirteenth street and Euclid avenue, Cleveland; pending.
150 tons Nooksack bridge, Bellingham, Wash.; bids in.
150 tons, bascule bridge, Cambridge, Mass.; pending.
125 tons, Hart building, Sacramento, Cal.; bids in.
100 tons, Edison substation, Brighton, Mass.; bids in.
Tonnage unstated, 18-story apartment building at 209 Lake Shore drive, Chicago; Benjamin H. Marshall, 612 Sheridan road, Wilmette, Ill., owner and architect.
Tonnage unstated, building for Fraternal Order of Eagles, Buffalo, N. Y.; bids being taken.
Tonnage not stated, addition to Chalfonte Haddon Hall, Atlantic City, N. J.; contractors' bids asked.
Tonnage unstated, Federal Reserve bank, Birmingham, Ala.; project being planned.

Belfont Elects Officers

Stockholders of the Belfont Steel & Wire Works, Ironton, O., held an organization meeting July 17, at which they elected I. P. Blanton, president and general manager; Edward Gilfillan, vice president and T. J. Hayes, secretary and treasurer.

Mill Strike Adjusted

Pittsburgh, July 22.—The McKeesport Tin Plate Co., McKeesport, Pa., has ironed out its differences with its striking hot mill men and yesterday morning it started up 22 out of 44 tin plate mills. The men agreed to return to work, accepting a 5 per cent wage decline in lieu of the 20 per cent reduction the management offered four weeks ago.

Imports Are Lighter

Philadelphia, July 22.—Imports at this port during the past week included the following: Pig iron from Calcutta, 407 tons; chrome ore from Portuguese Africa, 2000 tons; ferromanganese from England, 30 tons; iron ore from French Africa, 6003 tons; steel shapes from Belgium, 553 tons.

Car Inquiry More Active

Contracts for Repair of 700 Cars Placed—Prospective Business Large—Track Fastenings More Active—Scattered Rail Contracts Placed

RAILROAD TRACK MATERIAL PRICES, PAGE 191

New York, July 22.—Car inquiries are slightly more numerous, but the general run is small, and indications point to another light month in July. Virtually the only promising domestic car inquiry is that of the Missouri Pacific, involving 3000 cars, and some doubt prevails as to that being placed this month. In the export field, possible buying by Samuel Vauclain of 3000 cars for Mexico appears to be outstanding business in prospect. Repair work continues a rather small but interesting feature, orders for repairs of 700 cars being let last week.

Leading locomotive awards call for 10 switch engines for New York, New Haven & Hartford, placed with the American Locomotive Co., and 25 for the New York Central, 20 going to the American Locomotive Co. and five to the Lima Locomotive Works, Inc. For the New York Central, 15 Pacific type locomotives still are to be purchased. Other contracts include two locomotives for the Erie railroad, placed with Baldwin, and one switch engine for the Northern Pacific Terminal, awarded the American Locomotive Co. The Bangor & Aroostook is inquiring for four locomotives.

Track Fastenings More Active

Chicago, July 22.—Greatly increased interest has been displayed by the railroads in track fastenings, and in spike and bolts alone inquiry for 30,000 kegs made its appearance last week. The St. Louis-San Francisco railroad placed 5000 kegs of spikes and 2000 kegs of bolts. The Baltimore & Ohio railroad inquiry totals 10,000 kegs of spikes, 5000 kegs of bolts and 150 tons of axles. The Louisville & Nashville railroad is in the market for 12,000 kegs of spikes and 850 kegs of bolts. The Great Northern railroad inquiry aggregates 3000 tons of tie plates, 1000 tons of angle bars and 500 kegs of bolts.

On spikes the market at Chicago now is 2.80c to 3.00c and on bolts 3.80c to 4.00c. Tie plates are quoted at 2.45c, Chicago. Light rails are inactive at 1.90c to 2.00c, mill. The Terminal Railroad of St. Louis has placed 2000 tons of rails with a local maker.

Light Rail Orders Heavier

Pittsburgh, July 22.—Light rail orders from coal fields are continuing to come in larger numbers, although individually they still are small. These are taken at the 1.90c. base Pittsburgh figure for the most part although some 2.00c quotations still are current. Rail steel light rails are available at $2 to $5 per ton under that price. Track fastening inquiries are scarce although the Baltimore & Ohio, the Louisville & Nashville and the Great Northern railroads all are understood to be in the market for tie plates, spikes, track bolts, angle bars, etc. One or two local producers have not as yet quoted on the Great Northern's requirements of 2000 tons of tie plates. It is not believed that below 2.50c will be done on this large lot. Up to 2.55c is quoted on smaller quantities. Makers usually quote 2.90c on standard spikes but large orders can be placed at 2.80c. On small spikes 3.25c now is quoted, with 3.25c to 3.40c on boat and barge spikes, both grades subject to the new list of extras. Track bolts are quoted at 4.00c, base Pittsburgh, but as low as 3.75c can be done on large lots. Small track bolts are quoted at 4.50c to 4.75c.

CAR ORDERS PLACED

Ford Motor Co., seven 12,500-gallon coiled tank cars, to the Standard Tank Car Co., Sharon, Pa.
Carnegie Steel Co., 20 12,500-gallon coiled tank cars, to the Standard Tank Car Co.
Philadelphia & Reading, 60 cars, 40 steel passenger to the Bethlehem Shipbuilding Co., 10 combination to the Standard Steel Car Co., and 10 baggage to the American Car & Foundry Co.
Chesapeake & Ohio repairs to 500 gondola cars, work to be done in the shops of the Hudson Valley railroad.
Cambria & Indiana, repairs to 200 hopper cars, to the American Car & Foundry Co. Announced last week as awarded an unnamed builder.
Swift & Co. 100 steel underframes, to the Western Steel Car Co.

CAR ORDERS PENDING

Hershey Chocolate Co., Hershey, Pa., 50 to 100 tank cars; bids asked.
South African Railways, 500 gondolas; bids asked.
Cuba Cane Sugar Corp., New York, 210 cane cars; bids asked.
Maine Central, 250 box cars; pending.
W. R. Grace & Co., New York, 50 stock cars for export to Brazil; pending.
San Antonio & Aransas Pass, 75 tank cars; pending.
Dewey Portland Cement Co., Kansas City, four drop bottom gondolas; pending.
Standard Oil Co. of Brazil, nine tank cars; bids asked.

McMyler - Interstate Co. Considers Expansion

Negotiations for the purchase of the Industrial Works, Bay City, Mich., by the McMyler-Interstate Co., Bedford, O., will be brought to a head Aug. 22 when the stockholders of the Bedford company will be given an opportunity to approve the tentative plans of purchase. It is expected the name of the expanded company will be changed, and that other companies may be acquired. Stockholders will act on a proposal to increase the number of shares of common stock from 30,000 to 250,000 and to otherwise alter the financial structure to meet the new requirements.

The control of the Industrial Works would give the McMyler-Interstate Co. greatly increased facilities for supplying heavy railroad and material handling equipment. The Bay City plant specializes on wrecking cranes, pile drivers and other railroad equipment and industrial cranes. The McMyler-Interstate Co. was formed in 1910 by a consolidation of the V. McMyler Mfg. Co. and the Interstate Engineering Co. Its principal products are locomotive cranes, car dumpers, bridge and gantry cranes and other material handling equipment, and locomotive forgings. The officers of the McMyler company are R. W. Kaltenbach, president; Justin Griess, vice president and H. H. Hammond, secretary and treasurer.

The Nonferrous Metals

Nonferrous Metal Prices Climb—Sentiment Is Bullish as Foreign Outlook Improves—Market Is Active

	Copper—Electro delivered	Copper—Lake delivered	Spot tin Straits New York	†Lead New York basis	Zinc St. Louis basis	Spot† aluminum	Spot antimony	Spot nickel
July 16	12.37½	12.50	46.37½	7.00	5.85	26.50	8.25	28.00
July 17	12.37½	12.62½	46.00	7.00	5.85	26.50	8.25	28.00
July 18	12.50	12.62½	46.25	7.00	5.85	26.50	8.37½	28.00
July 21	12.62½	12.75	48.00	7.10	5.90	26.50	8.37½	28.00
July 22	12.75	13.00	49.00	7.125	5.95	26.50	8.44¼	28.00

†Outside market quotation.

NEW YORK, July 22.—The nonferrous metal markets have turned strong and buoyant, with more activity in recent days than at any time in two or three months. Sentiment has become pronouncedly bullish, in view of the progress made in the allied reparations conference now in session in London. The prospects for an agreement and the subsequent floating of a loan to Germany have encouraged important operators on both sides of the water to make extensive bull commitments and the rise in prices here and abroad have stimulated consumers purchases.

Copper prices advanced July 21 to 12.62½c to 12.75c, delivered, a rise of ⅜c to ½c from recent levels. This rise in electrolytic has been accompanied by similar strength in all the lines based on electrolytic, including lake and casting copper and all secondary descriptions.

The statistical position of the copper market has been excellent in spite of the dull domestic general trade, copper stocks having undergone a reduction of about 88,000,000 pounds since Jan. 1. In view of this condition, the possibility of further enhanced demand resulting from economic stability in Europe and improved business here has livened the copper market.

Zinc has been in active demand for export. Sales have involved several thousand tons the past few weeks and recently domestic demand has expanded. The excellent bookings by British galvanizers for export have filled some mills up to October and these mills have been buying American zinc to cover their coming needs. The price of prime western has begun to rise, selling at 5.90c, East St. Louis, Monday, for July-August shipment, as against 5.85c, the pegged price of the two preceding weeks.

Lead was in more active demand July 21 than on any day in months. Both eastern and middle western consumers entered the market, inquiring for many thousand tons, principally for August and September shipment. Prices have advanced from the recent low of 6.65c, East St. Louis to 6.80c, St. Louis, as of July 21. In the East, independent sellers have been quoting above the American Smelting & Refining Co.'s contract price of 7c, New York, asking 7.10c to 7.15c, New York, foreign demand for lead has been extremely heavy.

Tin prices rose about 3c a pound in New York between July 15 and July 21. London quotations advanced £9 on July 21, resulting in a 2-cent rise here. Simultaneously, sterling exchange rates also have risen sharply to about $4.39, further increasing import costs. The prospects for important results at the allied conference in London have encouraged important operators to adopt a bullish policy and speculation in the London market has involved a heavy tonnage of paper tin.

Aluminum quotations are unchanged, with resale metal still quoted nominally 26.50c, as against the producers price of 27c delivered, for 98 to 99 per cent virgin ingot.

Antimony has gained a little strength, advancing from 8.25c to 8.37½c 8.50c duty paid, for spot, with premiums asked for futures.

Mill Products

Base prices cents per pound, f.o.b. mill

SHEETS	
Copper, hot rolled, 4 oz., min..	19.50
High brass	16.25
Zinc, ga. 9 to 18 (plates ½c less)	9.50
Lead, full sheets (cut ¼c more)	10.75
Aluminum, bright, 0 to 35 gage..	37.50 to 92.00
SEAMLESS TUBES	
High brass	20.50
Copper	21.75
RODS	
High brass, round, ⅜ to 2½-inch	14.00
Naval brass rods	16.75
WIRE	
Copper	14.50 to 14.875
High brass	16.75

Old Metals

Dealers' buying prices cents per pound

HEAVY RED BRASS	
Cleveland	8.25 to 8.75
New York	7.50 to 7.75
Chicago	8.00 to 8.37
HEAVY YELLOW BRASS	
New York	5.75 to 6.00
Chicago	6.25
Cleveland	5.75 to 6.00
ZINC	
New York	3.25 to 3.50
Cleveland	3.00 to 3.25
Chicago, dross	4.25
HEAVY COPPER AND WIRE	
Cleveland	9.75 to 10.00
New York	9.50 to 10.00
Chicago	10.00
RED BRASS TURNINGS	
New York	7.00 to 8.00
Cleveland	7.50 to 7.75
Chicago	7.50 to 7.75
YELLOW BRASS TUBING	
Cleveland	6.50
NO. 1 BRASS ROD TURNINGS	
Cleveland	6.00 to 6.50
New York	6.00 to 6.50
Chicago	6.25 to 6.50
ALUMINUM BORINGS	
Cleveland	10.00

Secondary Metals

Casting copper, refinery	12.25
Remelt aluminum No. 12	20.50 to 21.50

Reading Closes Plant

Philadelphia, July 22.—The Reading Iron Co., Reading, Pa., closed its plant at Danville, Pa., indefinitely due to lack of orders.

Liberty Automatic Paper Box Machine Corp., Brooklyn, N. Y., has increased its capitalization from $10,000 to $125,000.

Lack of Supplies

Through Reduced Output Causes Cancellation by Sellers of Motor Fuel

New York, July 22.—Sellers of motor fuel and benzol have been forced to partially cancel many of their contracts, due to the sharp curtailment in production forced upon them by the trend of affairs in the steel industry. So far, however, they have not been forced to cancel any of their toluol and solvent naphtha contracts. The majority of sellers look for little improvement in output before the middle of August.

Prices on light oil distillates consequently are strong, although largely nominal, as follows: Pure benzol, 25 cents works in tanks and 30 cents in drums; 90 per cent, 23 cents works in tanks and 28 cents in drums xylol, 28 cents works in tanks and 33 cents in drums; toluol 29 cents in tanks and 31 cents in drums; and solvent naphtha 25 cents in tanks and 30 cents in drums.

While production of sulphate of ammonia is greatly reduced, there are not the motor fuel contracts as is the foregoing cases, to absorb a substantial portion of the output and as a result, prices are considerably easier on spot domestic business. Sellers are now quoting $2.30 to $2.35 works on this position and it is likely that any business of size would bring out further concessions.

Fertilizer manufacturers are figuring more actively on their contract requirements. This business will undoubtedly be placed under the spot market. The foreign situation remains listless with prices nominally unchanged at $2.55 to $2.60, port, in double bags.

The naphthalene market is featureless with prices virtually unchanged at 5½ cents works for flakes and 6½ cents works for balls. Phenol is unchanged at 29 cents local warehouse for spot shipment and 25 cents works for future shipments.

Coke Oven By-Product

	Spot*
Per Gallon at Producers' Plants in Tank Lots	
Pure benzol	$0.25
Toluol	0.26
Solvent naphtha	0.25
Commercial xylol	0.28
Per Pound at Producers' Plants	
Phenol	0.27
Naphthalene flake	0.05½
Naphthalene balls	0.06½
Per 100 Pounds at Producers' Plants	
Sulphate of ammonia	$2.45 to $2.55
Contract	
Pure benzol	Nominal
Toluol	Nominal
Solvent naphtha	Nominal
Commercial xylol	Nominal
Per Pound at Producers' Plants	
Phenol	$0.25
Naphthalene flakes	0.05½
Naphthalene balls	0.06½

*Spot distillates are subject to shading.

Orders Pittsburgh Plus To End

Federal Trade Commission By Majority Vote Issues Cease-and-Desist Order Against Steel Corporation and Certain Subsidiaries—Charges Pittsburg Base Allows Unfair Competition and Price Discrimination—Dissenting Opinion Filed

WASHINGTON, July 23.—Pittsburgh plus as a method of determining steel prices has been placed under the ban by the federal trade commission in a cease-and-desist order issued today and representing the majority opinion of the members of that body. This ruling brings to a termination the initial stage in this action which has been spread over a lapse of about four years. The commission directed that the Steel corporation and such of its subsidiaries as the Carnegie Steel Co., the Illinois Steel Co., the American Steel & Wire Co., the American Sheet & Tin Plate Co., the Minnesota Steel Co., the Tennessee Coal, Iron & Railroad Co. and the American Bridge Co., nominally made defendants for the entire steel industry, shall abandon the Pittsburgh base within 60 days and quote prices only on an f.o.b. or shipping point basis. The complaint against the National Tube Co., the Clairton Steel Co., the Union Steel Co. and the Lorain Steel Co., also subsidiaries of the Steel corporation, was dismissed.

The vote by the federal trade commission for the issuance of a cease and desist order stood 4 for and 1 against on the ground that Pittsburgh plus was an unfair method of competition contrary to the federal trade commission act and represented a price discrimination in violation of the Clayton act. Commissioner Nelson B. Gaskill of New Jersey dissented from this view and filed a separate opinion holding that there was no law on the statute books which required a manufacturer shall sell on an f.o.b. basis if he prefers to sell at a delivered price. The members of the commission voting for the decree were Huston Thompson of Colorado, Charles W. Hunt of Iowa, John F. Nugent of Idaho and Vernon W. Van Fleet of Indiana.

No provision is made under the law for the federal trade commission to enforce a cease-and-desist order.

The commission in its decree finds that (a) the Pittsburgh plus practice is contrary to the public interest; (b) is not based on the laws of supply and demand; (c) is a price-fixing scheme succeeding the old steel pools, Gary dinners, etc.; (d) is made possible by the dominant position occupied in the steel industry by the United States Steel Corp.; (e) substantially lessens and eliminates competition; (f) destroys competitors; (g) is price discrimination not made in good faith to meet competition; (h) is an unfair method of competition; (i) retards business in all steel centers except Pittsburgh; (j) adds unnecessarily to the cost of steel products; and (k) increases prices.

The majority opinion found no merit in the contention of the Steel corporation that the free operation of the law of supply and demand was responsible for Pittsburgh plus prices. On the contrary, it held that such a price system restrained free operation of supply and demand. It was held particularly unfair for the Steel corporation to charge its customers prices under this basis where they compete with other subsidiaries of the Steel corporation such as the American Bridge Co., the American Sheet & Tin Plate Co. and the American Steel & Wire Co.

The findings say that the testimony of 125 witnesses showing a lessening a destruction of competition in interstate commerce due to the Pittsburgh basing point practice, remains undisputed in the record.

The text of the federal trade commission's order reads that the Steel corporation and its subsidiaries shall refrain from quoting or selling in interstate commerce, plates, bars, shapes, structural shapes, sheets, tin plate, wire and wire products on the Pittsburgh plus basis or on any other basing point than that where the products are manufactured or shipped; from selling, contracting or invoicing products in interstate trade without distinctly indicating how much is charged for these products f.o.b. the producing or shipping points and how much is charged for actual transportation of these products from the producing or shipping point to destination, from discriminating directly or indirectly in price between purchasers of rolled steel for use or resale in the United States and its territories where the effect may be substantially to lessen competition among steel producers and users; provided, that nothing in the order shall prevent discrimination in price between purchasers because of differences in grade or quality, or that makes only due allowance for differences in the cost of selling, transportation or distribution or such discrimination in the same or different communities made in good faith to meet competition.

Use of any other basing point than f.o.b. mill or shipping point by the Steel corporation or its subsidiaries against whom the order has been issued, the commission sets forth, shall be deemed a violation of its finding. It is declared that:

1. The United States Steel Corp. is the dominant factor in the steel industry of the United States and that through Pittsburgh plus.

2. Its subsidiary companies enjoy con-

Chronology of Basing Point Case

Sept., 1908—Informal complaint made by Birmingham consumers because United States Steel Corp. sells "bars and plates on a Pittsburgh price basis."

Sept. 1, 1917—War industries board established Chicago base price on plates, shapes and bars.

June 12, 1918—E. H. Gary and presidents of 15 steel companies met in Duluth, Minn., to discuss complaints on Pittsburgh plus.

July 1, 1918—War Industries board abandoned Chicago base and restored Pittsburgh base.

Jan. 24, 1919—Western Association of Rolled Steel Consumers organized.

July 9, 1919—At suggestion of Judge Gary, representatives of Western association met with him before Federal Trade commission at Washington.

Aug. 1, 1919—Western association filed application for complaint against United States Steel Corp., Inland Steel Co., Interstate Iron & Steel Co., and Steel & Tube Co. of America, on ground that Pittsburgh plus violates Section 5 of the Federal Trade act and Section 2 of Clayton act.

Aug. 22, 1919—Superior, Wis., Commercial club and later other organizations filed similar applications for complaint.

Dec. 2, 1919—Preliminary hearings held at Washington.

July 24, 1920—Application for issuance of complaint denied.

Aug. 1, 1920—Western association applied for rehearing.

Sept. 20, 1920—Application granted.

Nov. 15-17; Dec. 6-9—Rehearings held.

April 30, 1921—Federal Trade commission issued complaint against United States Steel Corp. and subsidiaries.

June 2, 1921—Respondent filed answer to complaint.

Nov. 30, 1921—Federal Trade commission filed amended complaint.

Dec. 31, 1921—Respondents served answer to amended complaint.

March 4, 1922—Commission filed second amended complaint, after which testimony was taken at many points throughout United States.

March 29, 1924—Examiners report issued.

June 10, 1924—Respondents filed briefs.

July 23, 1924—"Cease and desist" order issued by Federal Trade commission.

trolling advantages over their competitors in the matter of prime cost of raw materials and delivered cost of finished products.

3. The normal development of the steel industry in respect of location has been retarded and that industry unduly concentrated.

4. The development of a properly disseminated fabricating industry has been very seriously obstructed if not reduced to practically a simple permissive basis.

5. The uneven development of the steel industry and that of its fabrication works a grave hardship to many sections of the country.

It is asserted by the commission that its order will serve to build up steel producing areas in sections outside of Pittsburgh which have been held back by the Pittsburgh basing point rule and will return to western and southern steel users the natural advantage of their location. It will decentralize the steel producing industry and other industries using steel in manufacture and will eliminate cross-hauls by the railroads operating under the plus system.

The statement is made that the Steel corporation eliminated Pittsburgh plus on plates, structural shapes and bars in the Chicago district in 1921 and in the Birmingham district in 1908.

Says Commission Lacks Legal Remedy

COMMISSIONER GASKILL in a separate opinion in which he dissents from the majority voice of the other members of the commission, says:

"I find myself unable to concur in the majority conclusion that the powers of the commission include a remedy for the practices complained of.

"The United States Steel Corp. is a legal entity. The policy of the corporation is to sell plates, shapes and bars only on a delivered basis. These products irrespective of the place of manufacture are valued as though they were at Pittsburgh and this uniform valuation of the products of the separate plants constitutes the Pittsburgh plus.

"The corporation does not sell at the Pittsburgh base price. It quotes prices at Pittsburgh base plus freight to the point of consumption. This is Pittsburgh plus. The actual selling price, however, involves another element. The mill for which delivery is made invoices the customer at Pittsburgh plus, less the actual freight to the point of consumption. What is added to Pittsburgh base to make the selling price is not the actual transportation charge nor a theoretical freight charge from Pittsburgh to the place of consumption but is the difference between them.

"The fabricating units of the Steel corporation start with the advantage over their rivals in the elimination of the freight rate from Pittsburgh to the point of fabrication in their favor.

"There is no law of which I am aware which requires a manufacturer to sell f.o.b. if he prefers to sell c.i.f., that is, to sell at the price of manufacture instead of delivered at his customer's warehouse.

"That satisfaction of the legal requirements may be deemed to fall short of economic justification does not increase this commission's powers nor enlarge its duties. In the present instance, it seems these effects are magnified by the dominance and strategic position of the respondent in steel production, by the fact that the product of the steel industry is a raw material of a subsequent industry and that the respondent is engaged in both phases.

"I do not believe that this commission can require the abandonment of the delivered sale price on a single base for the products of several mills under a single ownership any more than it can require the owner of the single plant to give over the uniform delivered price on its single product. The grant of power to this commission does not extend to the correction of what in its discretion, the commission may believe to be an economic mistake. If there is to be a remedy of effects whose cause is beyond the law, if there is to be so profound a change in established business practices as is here contended for, that responsibility relies upon the congress, because it alone has the power so to mold the common concept of public policy."

Contracts for Coke Ovens and Gas Plants

The Foundation Co., 120 Liberty street, New York, has just signed a contract with the Hudson Valley Coke & Products Corp. for the construction, near Troy, of a by-product coke plant which will include an auxiliary water-gas plant for making blue water-gas for heating ovens and carburetor water gas for the supply of six Hudson valley cities. The total cost of construction will be about $2,500,000. In connection with this contract, the Burden iron furnace near Troy is to be modernized under the supervision of the Foundation Co., at a cost of approximately $1,000,000. The construction company has also been awarded a contract by the Adirondack Power & Light Corp. to build 17 miles of 12-inch pipe line to carry gas under high pressure from the gas plant near Troy to the city of Schenectady. This will involve an expenditure of about $350,000.

The Hudson Valley Coke & Products Corp. represents the joint undertaking of the Burden Iron Co., the Oliver & Snyder Steel Co., E. Arthur Tutein, Inc., and others. It will operate blast furnaces and coke ovens, and will also supply gas under 20-year contracts to Albany, Troy and Schenectady, and through Albany to Rensselaer, Cohoes, and Watervliet. The new company can supply gas to these cities much more cheaply than can the isolated plants upon which they now depend. This move, unique in the field of gas supply, is therefore, in the direction of economy. It suggests the central superpower stations being built throughout the country to supply cheap power to industrial communities. With the new plant at Troy in operation, the six upper Hudson valley cities will not only have a uniform gas supply at a reasonable rate, but they will also be independent of the fluctuating price of fuel oil such as is used in the present plants. Another important factor in stabilizing the cost of gas is the tying-up into this project of valuable coal deposits which will guarantee a uniform cost for the basic raw material of water-gas manufacture.

Output of Steel Castings in June Lower

Washington, July 22.—Production of steel castings in June, totaling 48,718 tons, was the lowest monthly output in 1924, being slightly lower than January's mark of 51,406 tons, according to reports to the department of commerce by over two-thirds of the commercial castings capacity of the United States. Shop operations were at 48.4 per cent of capacity as compared with 56.2 per cent in May and 87.7 per cent in June 1923. The following table shows the bookings of commercial steel castings by 70 identical companies with a monthly capacity of 100,700 tons, of which 39,100 tons usually is devoted to railway specialties and 61,600 to miscellaneous castings.

	Total net tons	Per cent capacity	Railway specialties net tons	Miscellaneous net tons
1923 totals	867,563	...	380,000	487,563
Mo. av....	72,335	74.6	31,667	40,668
1924				
January ..	51,406	51.0	19,572	31,834
February ..	73,138	72.6	35,474	37,664
March	100,514	99.8	59,778	40,736
**April ..	67,806	67.3	33,151	34,655
**May	56,581	56.2	28,064	28,517
June	48,718	48.4	26,170	22,548

*Two companies with a capacity of 785 tons per month on miscellaneous castings now out of business.

**Reports missing from one small company on miscellaneous castings.

British Trade Much Hemmed In

Building Strike at Home, Revolt in Brazil, Belgian Low Prices Unite To Restrict Selling—Six Furnaces Blown Out—Russian Inquiries for Tin Plate Fail To Interest—Argentine Places 45,000 Tons of Sheets

Iron Trade Review Staff Cable

European Headquarters,
IRON TRADE REVIEW,
2-3 Caxton House, Westminster, S. W.1

LONDON, July 22.—Strike of the building trades has had a profound effect on demand for structural steel and builders are cautious about committing themselves for future construction. As a result of this demand being withdrawn six blast furnaces have been blown out, reducing the already small active number.

A sale of 45,000 tons of sheets to Argentine by British mills is a high light of the past week. Tin plate is active and Austria and Scandinavia are buying in fair quantities. Russia is inquiring but Welsh producers are unresponsive to overtures from that direction.

Demand for all classes of goods for export to Brazil has been checked by the revolution and shipments will await settlement of the difficulties and restoration of peace.

Belgium is capturing most of the business offered in steel for bolt manufacture with a price about £8 ($35.12) which is sufficiently under the domestic price to take the business. Berlin reports exports to the Far East have stopped, but border states are buying steel bars from stock at £6 ($26.34) f.o.b.

Stagnation Holds in British Steel Industry

European Staff Special

BIRMINGHAM, Eng., July 11.—General stagnation, a feature of the iron and steel trades for several weeks shows no sign of lifting. In pig iron the only movement toward improvement is indicated by the lighting of a furnace at the Ormesby ironworks of Cochrane & Co., to produce hematite. This is a new product for this firm. A few sales have been made at Cleveland, enabling No. 3 foundry iron to be sold at £4 8s 6d ($19.20) f.o.b. Some inroads have been made into stocks. The recovery may be attributable partly to some increase in export of coke which has made this fuel slightly firmer at £1 7s ($5.85). The Midlands have not shared in this new business, Yorkshire coke being plentiful at easier prices, some furnaces having been able to buy under £1 ($4.34) and the general belief is that prices will fall 2s ($.43) to 3s ($.64) per ton. This naturally encourages waiting.

Sterling—$4.34

British billets continue at £7 10s ($32.55) to £7 15s ($33.63) competing with Belgian material at £6 15s ($29.29) to £7 ($30.38). Representatives of French and Belgian houses attending the quarterly meeting indicated that the Birmingham market has become much less attractive, owing to the very low basis of recent business, and they are not disposed to press sales here.

Middlesbrough No. 3 Cleveland pig iron for second quarter realized an average of £4 9s 9d ($19.47) compared with £4 15s 8d ($20.75) for the three months, a fall in value which carries a reduction of 6¼ per cent in computing blast furnacemen's wages.

Expected railway orders have not materialized, and some further curtailment of output appears inevitable. The strike in the building trade will to some extent reduce the demand for joists, although large purchases from Belgium, as indicated by the board of trade returns, suggests this is already a branch of the trade in which British makers are being more or less beaten in competition. Heavy tonnages of finished steel are still being sent from Antwerp to foreign destinations at £6 15s ($29.29) f.o.b. for bar steel to the order of British merchants.

In the tube trade, German competition is becoming more prominent, and shows signs of returning to prewar dimensions. British tubemakers find it increasingly difficult to retain their hold of open markets abroad.

Mild scrap is a weak market, sales

European Steel Delivered to World Ports

Gross Tons—Prices Last Reported

	U. S. A. North Atlantic Ports	U. S. A. Pacific Ports and Vancouver	Buenos Aires, Rio de Janiero, East Coast of South America	Valparaiso, West Coast of South America	Calcutta, Bombay and Indian Ports	Singapore and Straits Ports	South African, Australian, New Zealand Ports	Hongkong South China	Shanghai and North China	Japanese Ports
*Foundry No. 3 Pig Iron, Si. 2.50-3.00	$22.10	$23.00	$23.20	$25.50	$24.00	$27.20	$27.75	$27.75	$28.30	$27.75
*Hematite Pig Iron, Phos. 0.02-0.05	23.80	24.75	25.30	27.50	26.00	29.20	29.60	29.60	29.80	29.60
Standard rails	40.00	41.25	41.25	42.25	40.50	44.00	44.50	44.50	45.00	44.50
Merchant bars	1.48c	1.55c	1.52c	1.57c	1.45c	1.65c	1.67c	1.67c	1.69c	1.67c
Structural shapes	1.45c	1.52c	1.50c	1.55c	1.43c	1.63c	1.65c	1.65c	1.67c	1.65c
Plates, ship, bridge and tank	1.74c	1.81c	1.79c	1.84c	1.72c	1.92c	1.94c	1.94c	1.96c	1.94c
†Sheets, black, 24 gage	2.76c	2.87c	2.97c	2.50c	2.78c	2.92c	2.95c	2.95c	2.97c	2.95c
†Sheets, galvanized, 24 gage corr	3.78c	3.88c	3.97c	3.93c	3.80c	3.94c	3.97c	3.97c	3.99c	3.97c
Plain wire, base	2.37c	2.44c	2.42c	2.47c	2.35c	2.55c	2.57c	2.57c	2.59c	2.57c
Galvanized wire, base	2.76c	2.84c	2.82c	2.87c	2.75c	2.95c	2.97c	2.97c	2.99c	2.97c
Wire nails, base	2.96c	3.03c	3.00c	3.05c	2.93c	3.13c	3.15c	3.15c	3.17c	3.15c
†Tin plate, base box	$5.20	$5.23	$5.35	$5.30	$5.20	$5.30	$5.35	$5.35	$5.40	$5.35

The foregoing prices are for delivery by cargo liners in ordinary quantities 100 to 1000 tons, c.i.f. to port of destination, but *without* customs duties, unloading charges, dock dues, commissions, etc., at destination. Owing to lack of uniformity in ocean freight rates, cargo shipments by tramp steamers may show considerable variation from these quotations. Pig iron and rails quoted dollars per ton, finished steel in cents per pound, tin plate in dollars per box. Quotations are for *Continental* iron and basic-bessemer steel, except as indicated; for British material add $4.50 to $6.00 per ton.

†British material, basic open-hearth. *British, Middlesbrough.

Current Iron and Steel Prices of Europe

Prices Converted into Dollars at Rates of Exchange, July 21

	British Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgian and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Ports	
Export Prices f. o. b. Ship at Port of Despatch—By Cable	£ s d			Francs		Francs	£ s d	
PIG IRON								
Foundry No. 3, Silicon 2.50-3.00	$19.32	4 8 0*	$18.10	350	$17.84	385	$23.05	5 5 0
Basic	18.66	4 5 0	18.10	350	17.84	385	26.34	6 0 0
Basic-bessemer	21.40	4 17 6†	17.58	340	17.15	370	23.05	5 5 0
Hematite, Phosphorus 0.02-0.05	21.18	4 16 6	22.23	430	.....	....	25.24	5 15 0
SEMIFINISHED STEEL								
Billets	$30.73	7 0 0	$25.33	490	$25.03	540	$26.89	6 2 6
Wire rods	48.29	11 0 0	36.19	700	32.45	700	34.02	7 15 0
FINISHED STEEL								
Standard rails	$37.32	8 10 0	$28.44	550	$34.76	750	$28.54	6 10 0
Merchant bars	1.71c	8 15 0	1.29c	550	1.25c	595	1.29c	6 10 0
Structural shapes	1.57c	8 0 0	1.24c	530	1.23c	585	1.29c	6 10 0
Plates, ship, bridge and tank	1.76c	9 0 0	1.71c	730	1.51c	720	1.39c	7 0 0
Sheets, black, 24 gage	2.55c	13 0 0	2.69c	1,150	2.52c	1,200	2.59c	13 0 0
Sheets, galvanized, 24 gage, corrugated	3.58c	18 5 0	4.10c	1,750	4.73c	2,250	3.53c	18 0 0
Bands and strips	2.15c	11 0 0	1.87c	800	1.84c	875	1.69c	8 10 0
Plain wire, base	2.38c	12 0 0	2.37c	1,020	2.21c	1,050	1.99c	10 0 0
Galvanized wire, base	3.04c	15 10 0	3.09c	1,320	2.73c	1,300	3.78c	19 0 0
Wire nails, base	2.84c	14 10 0	2.57c	1,100	2.31c	1,100	2.86c	14 7 6
Tin plate, base box 108 pounds	$5.03	1 2 7	.....	....	.....	....	$6.37	1 9 0
Domestic Prices at Works or Furnace—Last Reported								Renten Marks
Foundry No. 3 Pig Iron, Silicon 2.50—3.00	$19.32	4 8 0	$18.61	360(2)	$18.77	405	$22.77	99
Basic pig iron	18.66	4 5 0	18.61	360(1)	17.61	380	25.30	110
Furnace coke	4.61	1 1 0	7.76	150	7.42	160	7.36	32
Billets	30.73	7 0 0	24.30	470	26.19	565	24.84	108
Standard rails	1.67c	8 10 0	1.35c	575	1.58c	750	1.36c	130
Merchant bars	1.76c	9 0 0	1.40c	600	1.27c	605	1.30c	125
Shapes	1.76c	9 0 0	1.35c	575	1.25c	595	1.25c	120
Plates, ship, bridge and tank	1.86c	9 10 0	1.73c	740	1.59c	755	1.41c	135
Sheets, black, 24 gage	2.64c	13 10 0	2.69c	1,150	2.79c	1,325	2.29c	220
Sheets, galvanized 24 gage, corrugated	3.58c	18 5 0	4.10c	1,750	5.04c	2,400	4.80c	460
Plain wire	2.38c	12 0 0	2.22c	950	2.31c	1,100	1.77c	170
Bands and Strips	2.38c	12 0 0	1.94c	825	1.91c	910	1.72c	165

*Middlesbrough; †Scotch foundry iron; (1) Basic-bessemer; (2) Longwy. British export furnace coke £1 1s 0d ($4.61) f. o. b. Ferromanganese, £16 0s 0d ($70.24) f. o. b. The equivalent prices in American currency are in dollars per ton for pig iron, coke, semifinished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg, and German are for basic-bessemer steel.

having been made at £4 ($17.36) delivered at Midland works. Reports from Germany indicate that large shipments of steel scrap to Welsh ports may not continue as the Germans are inclined now to reserve it for their future use. But they are doing a considerable business here, payments in British sterling maintaining their old attraction. Heavy consignments of foreign scrap, while depressing the English market have been of much use to Welsh steelworks by reducing costs of production. In Scotland the tone is somewhat more hopeful, buying on a broader scale being expected in August. Plates and sections are called for in somewhat better quantity, but there is much outcry for specifications, especially for shipbuilding purposes.

Strength of the sheet market appears to be increasing. Thin sheets are in especially good demand on export account, a line which the Clyde works are specially qualified to handle. Welsh galvanized sheet works are in a strong position, and the market is firm at £18 5s ($49.20), with more or less substantial premiums where early delivery is called for. Makers are well situated in regard to forward business.

A meeting of the Tinned Sheet Manufacturers' association coinciding with the Birmingham quarterly meeting, confirmed the reduction of £2 ($8.68) per ton since the last quarterly meeting, reaffirming existing prices at £58 ($251.72) best charcoal, £56 ($243.04) for charcoal and £52 ($225.68) per ton for unassorted all on the 20 gage basis. For lead-coated steel sheets £28 ($121.52) was reaffirmed.

Orders are not large in tinplate but this market is sensitive to fluctuations in tin, and the present tendency is downward. Most sales are on the basis of £1 2s 7½d ($4.90). At present new business is sufficient to balance production, and a few makers are running for stock. Home buying is largely for odd sizes. The large scale of production is indicated by shipments during May of 60,480 tons, a substantial rise on the previous month and comparing with the previous best of January, 51,704 tons. Last week's shipments of tin plate totaled 174,790 boxes against 124,586 for the previous week. The trade is fairly confident of renewed buying in the autumn and a fair proportion of the works are booked until the end of September. Welsh tin plate bars remain at £8 12s 6d ($37.43) per ton subject to the usual rebate of 7s 6d ($1.62) to firms connected with the stabilization committee.

Believe Belgian Prices Are at Bottom

European Staff Special

BRUSSELS, July 14.—The Belgian iron and steel market has been showing little activity except for an interesting tonnage of rolled steel sold to India. To get the business, price concessions were made. Merchant bars were £6 7s 6d per metric ton (1.24c per pound) and beams were £6 5s (1.22c) f. o. b. Antwerp, delivery being promised for September and October. It is generally believed the lowest prices have been reached and it is hoped demand from China and Japan will soon revive. In the domestic market buyers maintain a conservative attitude in view of continued uncertainty and are ordering only for im-

Franc—$0.045

mediate needs. Pig iron is dull but prices are maintained since producers claim that at lower levels they would be selling at a loss. French iron ore used in Belgium has increased by seven francs ($0.315) a ton but there is a slight reduction in German coke; however, production costs are still high. Foundry pig iron 2.5 to 3 per cent silicon is quoted at about 405 francs ($18.20) per metric ton; basic bessemer pig iron is about 385 francs ($17.30). Luxemburg competes at the same prices and Lorraine furnaces are slightly higher. Demand for semifinished steel is active from foreign markets and at home, only a limited number of mills are on the market and prices vary. The average quotation for basic bessemer billets is 560 francs per metric ton ($25.20) f. o. b. Antwerp; Luxemburg quote about 570 francs and Lorraine 575 francs.

In steel prices are softening and mills need orders. Merchant bars are offered at 600 francs per metric ton (1.23c per pound) in the home market and £6 7s 6d (1.24c) f. o. b. Antwerp, for export; beams are about 10 francs a ton or 2s 6d ($.45) lower. Rods are about 730 francs (1.49c) hoops 900 francs (1.84c); cold finished steel bars range from 1225 to 1325 francs (2.50 to 2.71c). Luxemburg prices are about on a parity with the above which are quoted on orders ranging from 50 to 100 metric tons. The plate and sheet department is more satisfactory as far as the home market is concerned. Export business is not active owing to low prices offered by German mills. Belgian basic bessemer plates, 3/16 inches are quoted at about 730 francs per metric ton (1.50c per pound); sheets No. 24 gage are 1300 francs (2.66c) galvanized sheets, No. 24 gage are 2400 francs (4 90c).

There is a good demand from India for wire products but export prices are softening. Plain wire can be obtained at 1100 francs per metric ton (2.25c per pound); galvanized wire at 1350 francs (2.76c); wire nails at 1150 francs (2.35c).

Continental Markets Competing Keenly

European Staff Special

PARIS, July 11.—The week has been marked by further depreciation of the franc caused by economic conditions generally more than by speculation. In the meantime, iron and steel prices have dropped. Although these two factors should favor an increase of export trade, comparatively little new business has been registered in this line, and even in the domestic market orders, although numerous, have been for small tonnages and no long standing contracts have been passed. Confidence is not yet sufficiently restored to induce buyers and sellers to commit themselves to any large extent. Iron ore production in Lorraine is reduced owing to shortage of labor; French furnaces have no difficulty in obtaining supplies, but export business is reduced by over 30 per cent; demand from foreign markets continues heavy but can be only partly satisfied. Germany is reported to have bought 1,500,000 metric tons outside the French market, where this tonnage was not available. Exports of Lorraine ore to Great Britain have practically stopped. Receipts of reparations coke from the Ruhr are satisfactory and exceed 15,000 metric tons daily. The price of reparations coke remains fixed at 150.75 francs per metric ton ($7.50). French furnace coke is sold between 142 francs and 152 francs ($7.10 and $7.60)

There is keen competition in pig iron between France, Belgium and Luxemburg. In the French market also home producers are competing among themselves. Pig iron production is increasing in France, the highest record being reached in May with 658,397 metric tons, the latest figure issued. As a result, pig iron quotations are dropping. Foundry pig iron, 2.50 to 3 per cent silicon, has been offered as low as 335 francs ($16.75) per metric ton for important tonnages, but the average price is 340 to 350 francs ($17 to $17.50). Export business has constantly declined since March, owing to lower prices offered by British, Belgian and Luxemburg furnaces. Exports of French pig iron in March were 91,000 metric tons, 75,000 tons in April and 47,000 tons in May and it is expected June figures will be lower still. Hematite is more satisfactory, averaging 435 francs ($21.75) although some lots of 100 tons have been offered at 430 francs ($21.50).

The steel market appears to be calming down although there still is some export business, but competition from Belgium and Luxemburg is keen. It is reported from Brussels that Ougree-Marihaye and J. Cockerill & Co. have divided an order covering 12,000 metric tons of rails for South America. Belgian bars are sold £6 7s 6d or about 530 French francs per metric ton (1.21c per pound) f.o.b. Antwerp, whereas French bars are about 560 francs (1.27c), domestic price. The situation is easier in semifinished steel, French basic bessemer blooms being offered as low as 400 francs ($20) per metric ton f.o.b. mill. The average price for billets is 460 francs ($23). In Lorraine one mill has offered the following prices: 530 francs per ton (1.21c per pound) for beams; 565 francs (1.28c) for merchant bars; 680 francs (1.54c) for ship plates; 700 francs (1.59c) for 5-millimeter plates, for orders over 100 tons. In the North and Meurthe-et-Moselle districts, as much as 600 francs (1.36c) has been asked for merchant bars. The plate and sheet department is firm, plate prices tending upward and deliveries are extended 6 to 8 months. One Lorraine mill is out of the market.

Franc—$0.05

Germany's Foreign Steel Trade Falls Off

Berlin, July 12.—Germany's exports of iron and steel products amounted to 123,268 metric tons in April, compared with 134,223 tons in March, 147,029 tons in February, 118,405 tons in January, 134,411 tons at the end of 1923, and 143,213 tons in April 1923. With the exception of January, this is the lowest figure since November, 1923. Among the principal items exported in April were 34,161 tons of scrap, 13,570 tons of bars and bands, 10,000 tons of rolled and drawn wire, 8839 tons of plates and sheets, 6072 tons of nails, and 3901 tons of pig iron.

Germany's imports in April were only 80,746 tons, compared with 94,106 tons in March, 130,606 tons in February, 104,569 tons in January, 104,701 tons at the end of last year, and 154,283 tons in April 1923. This is the lowest figure since August 1921, when the total was 70,008 tons. Among the principal items imported in April were 25,215 tons of bars and bands, 11,489 tons of pig iron, 9013 tons of rails and track fastenings, and 8696 tons of plates and sheets.

British Export Prices On Higher Level

London, July 14.—Quotations compiled from customs manifests by the board of trade for May show British export prices were rather higher than for the previous month, although there was a drop in carbon billets and beams. Ferromanganese was $3 a ton higher than for the preceding month and plates and sheets were also $1 to $2 a ton higher than in April.

The average British export prices for May are as follows:

	£	s	d	
Foundry pig iron	5	0	0	$21.75
Ferromanganese	16	10	5	71.50
Carbon billets	13	14	0	59.50
Beams	10	12	1	46.00
Plates	11	19	2	51.80
Galvanized sheets	21	7	5	92.50
Tin plates	25	11	7	110.00

Some Duties Unchanged

London, July 14.—Detailed schedules of the new tariff on iron and steel in India just received in London indicate that many products remain at the old rate of 10 per cent ad valorem although these are mostly specialties. Practically all standard finished steel products such as bars, plates, shapes, wire, sheets, etc., come under the new tariff.

Among articles under the 10 per cent rate are pig iron, iron rice bowls, iron alloys, welded or seamless iron and steel pipes and tubes, pipe fittings, and certain railway track fastenings.

Italy Buys Less Steel

Washington, July 22.—Italian demand for iron and steel was somewhat restricted in June and orders were limited, but moderate activity continued and prices of semifinished products remained unchanged, Commercial Attache H. C. MacLean reports to the United States department of commerce from Rome. The industrial situation generally was satisfactory.

Steel Treaters Announce Program

Nine Sessions Including Symposia on Salt Baths, Heating Media, Hardness Testing and Metallurgical Education Prepared for Boston Convention—Afternoon Sessions on Commonwealth Pier, Where Exhibition Will Be Held

PLANS for the sixth annual convention of the American Society for Steel Treating to be held at Boston, Sept. 22 to 26, are nearing completion. Anticipating the desire of members and guests to drive the greatest possible benefit from the exhibition as well as from the technical sessions, and to enable them to attend both without undue inconvenience, the afternoon sessions of the technical program will be held on Commonwealth pier in a meeting room near the exhibition hall. Morning sessions will be held in the ballroom of the Copley Plaza hotel.

The tentative program just announced is as follows:

Monday, Sept. 22

MORNING SESSION, 10 A. M.

Address of welcome, James M. Curley, Mayor of Boston.

Response, George K. Bu gess, president, A. S. S. T.

TECHNICAL SESSION

"The Toughness of High Speed Steel," M. A. Grossman, Atlas Steel Co.

"The Study of High Speed Steel," H. J. French, Jerome Straus and T. G. Digges, bureau of standards and Washington navy yard.

"Hardness, Magnetically," A. V. deForest, American Chain Co.

"The Law of Depression of Freezing Point as Applied to Metallic Alloys," Kotaro Honda and Toyato Ishigaki, Imperial university, Japan.

"The Use of Coba't and Vanadium as Additions to High Speed Steel," Dr. W. Certel and Dr. F. Poelzgueter, Germany. (By title.)

AFTERNOON SESSION

Symposium on Salt Baths as Heating Media

"Heat Treatment in Salt Baths," Major A. E. Bellis, Bellis Heat Treating Co.

"Sa't Baths," Sam Tour, Doehler Die Casting Co.

"Salts for Heating," W. J. Merten, Westinghouse Electric & Mfg. Co.

Other contributions to be announced later.

Tuesday, Sept. 23

MORNING SESSION

"Density and X-Ray Spectrum of Hardened Ball Steel Drawn at Various Temperatures," F. L. Wright, Atlas Ball Co.

"The Application of X-Ray Crystal Analysis to Metallurgy," Dr. W. P. Davey, General Electric Co.

"Spheroidizing Cementite in Large Steel Forging," J. Fletcher Harper, Allis Chalmers Mfg. Co.

"High Power Photomicrography," F. F. Lucas, Western Electric Co.

"Shock Tests on Notched Bars," Dr. Moser, Germany. By title.)

"A Laboratory Method for the Preparation of Small Steel Bars Differing Only in Carbon Content and the Effect of Changes in Carbide Concentration on the Specific Resistance," E. D. Campbell, University of Michigan and G. W. Whitney, American Smelting & Refining Co. (By title.)

AFTERNOON SESSION

Symposium on Heating Media, including Oil, Gas and Electricity

"The Relative 'Over-All' Economic Worth of Electric Heat Versus Fuel for Heat Treating Processes, has a Floating Value," E. F. Collins, General Electric Co.

"Oil as a Heating Medium," J. A. Doyle, W. S. Rockwell Co.

"Gas as a Factor in Improving Quality Standards and Lowering Production Costs of Heat Treated Steel," H. O. Loebell, Combustion Utilities Co.

Other contributions to be announced later.

Wednesday, Sept. 24

MORNING SESSION

Annual Meeting of the American Society for Steel Treating Technical paper by Dr. John A. Mathews, Crucible Steel Co. of America.

"On the Transformations in Pure Iron," Kotaro Honda, Imperial university, Japan.

"Some Important Items for Obtaining Sharp Melting Respecting Transformation Curves," Carl Benedicks, K. G. Lund and W. H. Dearden, Stockholm, Sweden. (By title.)

"Granulation Hypothesis and the Delta-Gamma Change in Iron-Carbon and Nickel Alloys," Col. N. T. Belaiew, London. (By title.)

AFTERNOON SESSION

"The Heat Treatment of Automobile Parts," J. M. Watson, Hupp Motor Car Co. (Illustrated with a motion picture.)

"The Necessity of Co-operation Between Producer and Consumer of Structural Steels," Walter Graham, Curtiss Bay Copper and Iron Works.

"Progress in the Manufacture and Use of Clay Refractories," W. G. Owen, Haws Refractories Co.

Thursday, Sept. 25

MORNING SESSION

"Thermal Transformations During Hardening of Carbon Steels," H. J. French and O. Z. Klopsch, bureau of standards.

"A New Theory of Overstrain and Strength of Materials," H. P. Troendly and G. O. Pickwell, Wm. D. Gibson Co.

"X-Ray Testing—Foundry Control," H. H. Lester, Watertown arsenal.

"Heat Treatment of Carbon Steel Castings," A. E. White, University of Michigan.

"The Effect of Various Reductions in Forging upon the Physical Properties of Steel," D. J. McAdam Jr., U. S. naval experimnetal station, Annapolis.

"Influence of Texture on the Manufacture and Treatment of Different Steels, Especially on High Speed Steel, Dr. Franz Rapatz, Germany. (By title.)

AFTERNOON SESSION

Hardness Testing Symposium

National Research Council

"Rockwell and Brinell Hardness," S. C. Spalding, Halcomb Steel Co.

"The Ball Indentation Hardness Test," S. L. Hoyt, General Electric Co.

Other contributions to be announced later.

Friday, Sept. 26

MORNING SESSION

"Stainless Iron and Steel," T. Holland Nelson, United Alloy Steel Corp.

"Stainless Steel and Stainless Iron," O. K. Parmiter, Firth Sterling Steel Co.

"Tensile Properties of Some Steel Wire at Liquid Air Temperatures," W. P. Sykes, National Lamp Works of the General Electric Co.

"Macroscopic Examination of Steel," V. O. Homerberg, Massachusetts Institute of Technology.

"Grain Boundaries in Steel," Cecil H. Desch, England. (By title.)

AFTERNOON SESSION

Symposium on Metallurgical Education

"Metallurgical Education," Bradley Stoughton, Lehigh university.

"On Metallurgical Education," S. L. Hoyt, General Electric Co.

Other contributions to be announced later.

Eastern Foundrymen Meet at Nantasket

Four eastern foundrymen's associations joined last week in a summer outing at Nantasket, Mass., which it is hoped will develop into an annual institution. The associations represented were the Philadelphia Foundrymen's association, the Newark Foundrymen's association, the Connecticut Foundrymen's association and the New England Foundrymen's association.

In January by coincidence the Philadelphia, Newark and New England foundrymen's associations all held their annual meetings on the same night and as a result telegrams were exchanged during the evening in a spirit of friendliness and co-operation, and the groundwork was then laid for closer contact in the work of the different associations.

The recent gathering at Nantasket, while essentially of an outing character, nevertheless had its serious side which dealt chiefly with uniform costs. Norman Russell, president of the New England Foundrymen's association opened the session by pointing out the common interests of eastern foundrymen and by voicing a hope that co-operation among the various associations could be secured.

J. L. Carter, president of the Newark Foundrymen's association told about the progress made in the matter of uniform cost systems in and around Newark. He said that the majority of the foundries had joined a plan of standardizing the manner of keeping costs.

Fred Stickle, president of the Connecticut Foundrymen's association, told about the problems and working arrangement now in effect in and around Hartford. He said that through co-operation among the managements of the different foundries almost 100 per cent open shop operation was now in effect.

In order to have a basis for standardizing cost accounting methods throughout the entire eastern foundry field it was voted that the different associations appoint members to a joint committee to work out plans and methods of procedure.

Nearly 150 foundrymen left Boston by boat for the shore dinner which was served at Nantasket. Satisfaction was expressed by the different association presidents in having actually accomplished a joint meeting for the first time.

The Providence Gas Co. invited all those present to join in its complimentary outing to foundrymen which will be given at Providence in August.

Millworkers Lose Strike

Toronto, O., July 21.—After a conference July 17 between Gilbert Follansbee, manager of the Toronto plant of the Follansbee Bros. Co., and representatives of striking bar mill workers, an agreement was reached whereby the men return to work today on the tonnage basis, originally offered by the management.

Coast Trade Is Dried Up

Drought Puts Difficulties in Way—Building Keeps Up Well but General Demand Is Slack—Prices Are Weaker

SEATTLE, July 16.—Although activity is lacking and some unfavorable factors have developed, business on the Pacific Coast is far from discouraged.

Forest fires in all the Pacific Coast states are causing some anxiety while in California shortage of water, due to the greatest drought on record, is hampering activity. State authorities have authorized a 25 per cent reduction in the car service at Los Angeles and have instructed the power companies to arrange for an allocation of water. Prices, especially in Los Angeles, are being radically cut in some instances.

Building construction and improvement projects are being pushed actively in Seattle and vicinity. Bids for the $1,000,000 Eagles Temple, involving 550 tons, have been rejected and plans are being revised. Standard Oil Co. has begun its $250,000 terminal storage station on Lake Union. During the week contract was awarded for a $125,000 Catholic church while Barton & Co., meat packers, propose construction of a $750,000 plant. The Federal Power commission has postponed action on the Priest Rapids, Washington, development project for several months. The improvement includes a 90-foot dam which the fish interests are opposing.

Seattle is contemplating several important improvements. It is planned to replace the Magnolia bluff bridges with permanent steel construction, 500 to 5000 tons, depending on the plan adopted. Eleven cast iron pipe jobs are pending, involving 6000 to 7000 tons. One water improvement calls for expenditure of $1,750,000 including three reservoirs and a 48-inch pipe line to Swan Lake. Also a sea wall is proposed which will involve 40 tons of sheet steel piling. The city on Aug. 15 will open bids for furnishing not less than 75 nor more than 125 new street railway cars. Bids will be opened July 18 for 41,750 feet of ½-inch to 6-inch galvanized wrought iron pipe.

Pig Iron and Coke

Business in coke and iron is quiet. Buying is on a hand to mouth basis. Importing houses are quoting $31.50 for No. 1 Glengarnock. It is expected that Utah iron from the recently opened plant at Provo will be a strong competitor. It is being offered on a basis of $30. July 9, bids were opened by the Southern Pacific at San Francisco for 500 tons of No. 1 southern or Scotch pig iron. Belgian iron was quoted $29.50 to $30.50 and Glengarnock $31.50 to $32.50, one importer offering Glengarnock at $29.50 c.i.f. duty paid.

Bars, Plates and Shapes

Reinforcing bars are moving more actively than merchant bars although in small tonnages. No large awards are pending. The local steel plant reports the same operations. Mill prices remain unchanged at 2.75c here and at Portland although eastern bars are being offered at about 2.70c. San Francisco reports foreign bars being imported in limited quantities on a basis of 2.05c including duty, c.i.f. San Francisco bar mills have reduced merchant bars to 2.30c f.o.b. San Francisco for carload lots and 2.40c for l.c.l. The Pacific Coast Steel Co. has two open-hearth furnaces active at San Francisco.

Plates are not in active demand, the best prices quoted here being 2.40c, the same as a week ago. Quotations of 2.45c delivered buyer's plant are freely made. Universal plates for structural purposes are being imported into San Francisco at 2.10c. The only award of note during the week was one for 800 tons for city pipe line, Los Angeles, jointly to the Llewellyn Iron Works, Lacy Mfg. Co. and Western Pipe & Steel Co.

Several large shape contracts are pending in this district, the total being better than 2000 tons. The best price noted here is 2.50c. San Francisco reports state that structural shapes are nominally at 2.55c although a reasonable tonnage could be secured at 2.50c base, c.i.f. San Francisco. Foreign structural shapes are 2.00c to 2.10c base.

Other Finished Materials

The Barde Steel & Machinery Co. has been awarded the contract for 3000 tons of 70-pound rails for the railroad to be built by the Bloedel-Donovan lumber mills, on the Olympic Peninsula, Washington. This order has been placed in Germany and part of the shipment is already en route. The Harbor Board, Los Angeles on July 18 will open bids for 1000 tons 128-pound girder rails, 107,000 tie plates for 75-pound rails, 9000 tie plates for 128-pound rails and 500 kegs of 9/16 x 5½-inch track spikes. The same body has awarded 2000 tons of 75-pound rails, A. S. C. E., at $35.40 delivered yards of the board, Los Angeles, to the United Commercial Co. Foreign material will be furnished.

Jobbers are working on unchanged prices. Business shows little change and stocks are in good shape. Business is in small tonnages. Sheets, bolts, nuts and rivets are in fair demand. Distributors in San Francisco have advanced prices on No. 28 gage galvanized sheets to 6.20c.

Old Materials Dull

There is little encouragement in iron and steel scrap. The market is weaker than a fortnight ago, the principal buying interest quoting only $8.50 gross for No. 1 prepared. This is no attraction to dealers, who are shipping only limited tonnages. Demand is lacking and there is no foreign inquiry to sustain prices. The same situation applies also to the cast iron market. Competition of cheap continental pig iron has reduced the cast scrap required by foundries, and the turnover is light. Prices are reported from $18.50 to $20, the latter applying only to best grades. One lot of good material was reported sold at $18.50 this week.

Scrap Reacts but Gains

(*Concluded from Page* 192)

ket remains dull with most grades exceedingly sluggish. Wrought iron pipe has sold in small lots at $10.50. Stove plate is without a market but is held nominally at $15. Strictly No. 1 has sold at $18.50 with one sale of textile scrap reported at $19.

Better Buying at Cleveland

Cleveland, July 22.—Iron and steel scrap continues strong as a result of increasing consumer inquiry and buying, considerable tonnage being placed. However, transactions in the Cleveland district proper for the most part are unimportant although dealers continue to pick up material. Heavy melting steel now is $15.75 to $16.25; machine shop turnings, $13.25 to $13.50; cast borings, $14 to $14.25; loose bundled sheets, $12 to $12.25; hydraulic compressed sheets, $13.50 to $14. Recent purchases by a Mahoning valley steelmaker have been of much interest to the trade here. While efforts have been made to minimize the quantity involved, which has been reported in some sources as high as 50,000 to 75,000 tons, it is known to have been slightly above 20,000 tons, including heavy melting steel at $18 and hydraulic compressed sheets at $16 a ton.

Strongest at St. Louis

St. Louis, July 21.—Strength and activity among dealers have appeared in the market for iron and steel scrap. Prices were advanced generally and everything offered is being taken. In addition the industries are buying more freely. The recent upturn in prices and relative scarcity of material have served to bring in a number of melters who had hoped to get better terms by waiting. Everything in steel specialties is in brisk demand and higher in price. Inquiries from other consuming centers are more numerous and at prices permitting profitable shipment from this territory. Rerolling rails are higher and in better demand, mainly in sympathy with the upturn in melting rails. Cast grades, while quiet, have displayed sympathetic strength.

Little scrap is coming into sight, either from surrounding territory or railroads. The recent advance has established a level at which it is possible to ship profitably from some southern and western points, and increased arrivals are likely during the next few weeks. The only railroad list before the trade is of 500 tons from the Frisco. As has been the case during the past month, local lines have been disposing of fair tonnages through private sale. Bids for scrap by mills direct to carriers were reported, chiefly involving heavy melting steel and steel specialties.

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Commission Bans Pittsburgh Plus

ISSUANCE of a cease-and-desist order by the federal trade commission directing the discontinuance of the Pittsburgh plus practice of quoting steel prices has not been unexpected. In fact, this action has been forecasted by the general attitude of the trade commission as it has been constituted at present, by the popular interest that has been shown in these proceedings to which it was obvious such a quasi-political body as the commission would hearken to and by other factors apart from a purely judicial balancing of the evidence. There can be no question that the decree of the trade commission will prove popular to a large expense of territory, particularly in the Middle West where the fight against this practice was vigorously made.

It is well to bear in mind, however, that the cease-and-desist order does not abolish the practice. Pittsburgh plus is certain to be finally settled in the highest courts of the land to which the steel industry is sure to appeal its case, and in accordance with strict legal principles. While the present action has been directed against the Steel corporation, it is of course against the entire steel industry, because virtually all producers have been quoting on the Pittsburgh plus principle or its modification.

It will remain for the courts to say what may appear to be an economic wrong comes within the sphere of violation of law. The minority opinion of one member of the trade commission gives expression to this question. This opinion suggests the doubt which has been in the minds of many students of this case, whether the selling of steel on a delivered price basis irrespective of place of manufacture and figured against a Pittsburgh valuation, contravenes the law.

Strictly considered, the trade commission's decree means that these buyers of steel who have claimed injury under the present practice have established their case on economic grounds. The greater and most essentive thing to be achieved for them, the abolition of the practice in any form, under the law, still lies before them.

By-Product Coke Passes Pig Iron

RUNNING true to the precedent established in the past several years, by-product coke production now exceeds that of pig iron, indicating a depressed condition of the general market. It appears from study of production figures that in a period of prosperous business, neither boom nor slack, coke in net tons is almost exactly equal to pig iron production in gross tons. When business slackens by-product production is in excess of pig iron tonnage, while in a period of activity the tonnage of pig iron exceeds that of by-product coke.

Apparently other factors than blast furnace demand affect the output of by-product coke, which does not accelerate or diminish as rapidly as in the case of beehive coke. It is significant that sufficient by-product capacity now exists to balance pig iron production. Not all coke of this grade is used in blast furnaces, or even in metallurgical work, but changes in the situation which have been going forward for many years, tend to relative extinction of the beehive industry and the relative increase of the by-product.

As the industry now operates, practically all the shrinkage in output at the time of lessened pig iron production is taken by beehive operations. The production of by-product coke in June was 2,403,000 tons, while beehive coke production was only 555,000 tons, the slack being taken largely by the beehive operation. While the latter sells only coke, the former has numerous other factors to consider. By-products and gas often are sold on contracts which must be maintained and in slack demand for coke, positions are reversed and the usual by-products become the principal feature, coke being in reality the by-product.

Has the Pig Iron Market Turned?

SOME firming tendency of prices which has been featured the past two weeks at certain trading centers by advances asked by sellers, suggests the question whether the pig iron market is at the termination of its long period of decline. If the turn of the market in reality has been made finally, as various signs now indicate, it means the end of at least 12 months of

falling prices, subject to one temporary modification.

Retrospective examination of pig iron prices running back from the present day brings out some interesting facts. Beginning a rise in December 1923, the market advanced continuously for four months until April of that year. This rise represented $4 to $5 a ton. From that point there was a steady decline for seven months until December, amounting to $8 to $9 a ton. The upward swing from that point into 1924 was much shorter-lived. It ran only into February and amounted to $1.50 to $2 a ton. In March a recession again overtook the market. From March until the present time the decline has been $4 to $5 a ton in practically all districts except the East where it has amounted to about $2 to $2.50 per ton.

Therefore, in the last 18 months the pig iron market has experienced two rising swells and two severe falls. The latter have considerably exceeded in extent the advances so that the market today generally is $10 to $12 a ton below its high point of April 1923. This decline undoubtedly, has forced prices below the cost of production except possibly for the most favored furnaces. This condition has brought merchant iron production to the lowest point since October 1922 and to a point substantially 40 per cent below that of the high production period of April-June, 1923.

Pig iron prices at bottom, however, necessarily do not mean any considerable turn in the opposite direction. The volume of future buying as well as the extent of continuing production will determine that. In fact, beyond some natural reaction, the facts do not presage any considerable upturn of the market. Stocks of iron in the hands of merchant producers are the largest in years if not the largest in history. Consumption of merchant iron as revealed by shipments has fallen so far that it remains even below the attenuated production. The pig iron market, therefore, may have turned the corner but there is not much prospect for its enjoying an extensive or immediate price recovery.

Wages Demoralize Coal Industry

NEWS that 45 coal mines in the Kanawha field of West Virginia are resuming operations on a non-union basis, with wages substantially at the level of the 1917 scale, directs attention anew to the serious situation in the coal fields of the Central West.

In Ohio, Indiana, Illinois and Kentucky the insistence of the United Mine Workers that the Jacksonville scale with its high hourly and tonnage rates of 1922 and 1923 be observed has placed miners, operators and coal-mining district municipalities in a precarious plight. Probably 85 per cent of the Ohio and 70 per of the Indiana and Illinois mines are down. In these three states 100,000 miners are idle and those still on payrolls are getting in no more than two or three days a week.

The situation in Kentucky is difficult to appraise. Some union mines are turning non-union and beginning operations on a lower wage scale. Miners as a whole appear willing to take a lower wage rather than continue idle. In some cases the pressure of the national miners' organization has not been able to withstand the local demand for permission to accept a reduced scale. The claim of national union officials that miners will have to grow hungrier than they are today to abandon the Jacksonville scale seems unfounded.

The efforts to consolidate many properties in Illinois indicates the effect upon operators. Some municipalities see bankruptcy ahead, and possibly abandonment, a fate akin to that of many a mushroom town in the far western mining fields. The cold facts are that the non-union mines in West Virginia and other states are taking business from the union mines at an alarming rate and adherence to the high post-war mining rates is impossible.

Isolating the Corrosion Germ

CORROSION is to metallurgy what cancer is to the science of medicine. It is one of many problems which tantalize man and challenge his skill and patience. Frequently when its mysteries seem nearest the point of solution, new and hitherto unsuspected factors creep in to confound investigators and send them delving into fresh channels of research.

Fortunately the world's dependence on iron and steel has brought wide attention to the serious need of combatting corrosion. Through the work of Sir Robert Hadfield in England and that of the American Society for Testing Materials in the United States, interest of English-speaking nations in the subject has been thoroughly aroused. The testing society has been conducting tests on corrosion for many years, and although no startling revelations have resulted, much valuable data have been obtained. Among the interesting reports on corrosion submitted at the recent Atlantic City meeting was that on total immersion tests. The sub-committee declares that "contrary to the results in the atmospheric tests it is evident in these total immersion tests that the presence of copper is not a factor in the life of the specimens."

If this conclusion could be accepted as final, it would be helpful in future work. For one thing, it would remove one of the possible factors in the report on the corrosion of the steel plates of the S. S. LEVIATHAN published on page 229 of this issue. In so far as under-water steelwork is concerned, it would seem to turn attention from the influence of copper content to that of structure. At any rate, the fact that the science of metallurgy has not yet found the key to the problem—at least not to a point permitting a definite explanation of why one steel plate resists the attack of salt water while another of similar analysis does not—should challenge investigators and inspire them to still greater effort in their uphill contest against corrosion.

Current Statistics of Industry

June Coke Production in Further Decline

Washington, July 21.—In company with production of iron and steel, the output of coke was reduced sharply in June. The total quantity produced was 2,958,000 net tons, of which 2,403,000 tons were from by-product and 555,000 tons from beehive ovens. Comparison with June shows decreases of 14 per cent and 27 per cent respectively.

The present monthly rate of by-product coke production is 23 per cent below the average for 1923, and is less than since early in 1922. The average daily output in June was 80,087 tons, a decrease of nearly 11 per cent. The relation of production to capacity was 66.4 per cent. Ovens affiliated with blast furnaces produced 80.7 per cent of the total output.

Activity at beehive ovens has decreased until the monthly output is only 38 per cent more than the weekly rate a year ago. June, 1924, production was more than double the corresponding month in 1921, when the industry was in a state of extreme depression. The monthly record of coke production follows:

Monthly average	By-product coke	Beehive coke	Total
1917	1,870,000	2,764,000	4,634,000
1918	2,166,000	2,540,000	4,706,000
1919	2,095,000	1,638,000	3,733,000
1920	2,565,000	1,748,000	4,313,000
1921	1,646,000	462,000	2,108,000
1922	2,379,000	714,000	3,093,000
1923	3,127,000	1,497,000	4,624,000
April, 1924 ..	3,010,000	1,079,000	4,089,000
May, 1924 ...	2,786,000	761,000	3,547,000
June, 1924 ...	2,403,000	555,000	2,958,000

Production of beehive coke recovered in the week ended July 12 but failed to reach the preholiday level. As estimated from railroad reports of cars of coke loaded the total output is now placed at $105,000 net tons, an increase of 11,000 tons. That production was at a less rate than in the preceding week is shown by the fact that the average daily production for the six days was about 1000 tons less than that for the five days of the holiday week. The extent of the depression prevailing in the coke industry is revealed by the fact that the average daily rate of output is less than one-third of that a year ago.

	Week ended July 12, 1924a	July 5, 1924b	July 14, 1923
Pennsylvania & Ohio.	68,000	62,000	293,000
West Virginia	6,000	5,000	21,000
Alabama, Kentucky, Tennessee & Georgia	15,000	13,000	23,000
Virginia	7,000	6,000	15,000
Colorado & New Mexico	5,000	5,000	7,000
Washington & Utah..	4,000	3,000	7,000
United States total...	105,000	94,000	366,000
Daily average	18,000	19,000	61,000

(a) Subject to revision. (b) Revised from last report.

According to the *Connellsville Courier* production in the Connellsville region failed to recover the loss resulting from observance of Fourth of July and production decreased to 49,750 tons.

Car Loadings Are Less

Washington, July 22.—Car loadings for the week ending July 5 were 759,942, compared with 850,082 the corresponding week of 1923. Coal loadings were 111,458, compared with 155,286 a year ago, coke 6697 compared with 13,771 and ore 48,842 compared to 73,609 the same week last year.

The Carnegie Steel Co., Homestead, Pa., held its annual picnic at Kennywood park near Pittsburgh, Saturday, July 19, and all departments of the steel plant closed down. The committee in charge was headed by Superintendent John S. Oursler.

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Sheet Output and Sales Show Drop for June

Sales production and shipments of sheets as reported by the National Association of Sheet and Tin Plate Manufacturers for June show decreases from the May figures. Sales declined from 126,487 tons to 108,693 tons; production from 176,582 tons to 114,807 tons, and shipments from 196,254 tons to 141,176 tons. Further comparisons, giving the relative percentages of capaciy, follow:

	Net tons June, 1924	Per cent of capacity	Net tons May, 1924	Per cent of capacity
Sales	108,693	38.7	126,487	42.7
Production	114,807	40.9	176,582	59.6
Shipments	141,176	50.2	196,254	66.2
Unfilled tonnage July 1 and June 1	246,810	87.9	294,774	99.5
Stock awaiting shipment first of following month	82,465	29.4	89,548	30.2
In stock unsold first of following month ...	45,776	16.3	43,319	14.6

The total number of hot mills in the country is 686. The June capacity of the mills was 395,800 tons, and the percentage of the total capacity for May was 419,000 tons, and the May figures represented 70.7 per cent of capacity.

Following is a comparison of sales, production and shipments reported by the National association during the past 13 months:

	Sales	Production	Shipments
June	108,693	114,807	141,176
May	126,487	176,582	196,254
April	182,903	234,000	235,967
Mar.	251,411	278,767	262,497
Feb.	189,081	275,118	249,859
Jan., 1924.....	234,858	274,097	228,660
Dec.	349,446	155,229	188,600
Nov.	165,491	188,144	199,836
Oct.	185,110	225,714	230,820
Sept.	223,556	185,577	205,772
Aug.	116,659	234,112	234,486
July	92,358	174,910	192,261
June	172,637	218,432	233,128
May	242,624	260,006	278,059

Furniture Shipments Lower

Washington, July 22.—Shipments of steel furniture in June were valued at $1,270,615, making the third consecutive monthly drop, according to reports of the department of commerce based on returns by 22 manufacturers. The following figures compare:

	1922	1923	1924
January	$983,834	$1,362,470	$1,592,338
February	967,125	1,307,173	1,605,409
March	1,087,228	1,709,206	1,661,303
April	1,058,382	1,526,286	1,658,610
May	1,056,735	1,506,072	1,505,367
June	1,015,463	1,401,950	1,270,615
July	945,768	1,247,605	.....
August	943,087	1,345,147	.....
September	1,062,495	1,273,259	.....
October	1,227,447	1,365,600	.....
November	1,204,310	1,339,425	.....
December	1,376,152	1,455,836	.....

The Business Trend

July 24, 1924

BY JOHN W. HILL, FINANCIAL EDITOR

RECENT developments affecting the American farmer and Europe and conditions have been of outstanding importance. They may prove to be the forces required to give real impetus to any trade improvement that may be near at hand.

Many obstacles remain in the path of a settlement of Europe's difficulties. However, there is reason to expect that efforts now being made at London to make possible the application of the Dawes plan may be successful.

The chief point at issue involves security for proposed loans to Germany. France is reluctant to relinquish either her claims upon German resources or her power, through the French-controlled reparations commission, to declare Germany in default. Britain, however, wants investors assured against hasty action which might impair the security of loans.

American interest in European settlement is enormous. The Dawes plan bears the name of an American. An American may be named "agent general" to direct the plan, and American investors will be asked to supply the bulk of the $200,000,000 German loan.

Fear European Competition

Some observers fear European competition for American goods. That is a danger not nearly so disturbing as a Europe perpetually on the verge of economic collapse. Moreover, American food, credit, raw materials and implements will be needed abroad for some time.

The agricultural outlook holds much encouragement. At their recent high points wheat had advanced 34 cents a bushel and corn 40 cents from the year's lows. Speculation based on short crop prospects in many countries explains the advance.

Farmer to Get More Cash

Better prices, if held through harvests, will greatly augment farmer buying power. At current values the prospective cash return for reduced crops indicates an increase of $350,000,000 or about 10 per cent over that for the bumper 1923 yields.

The stock market has continued strong largely under the stimulus of easy money. Railroad shares have moved higher, despite smaller traffic and earnings. Another factor was the refusal of the interstate commerce commission to lower freight rates on grain, due to higher prices for wheat and corn.

In the steel trade the effect of recent reaction upon earnings is indicated by the sharp decline in second quarter income of the Republic Iron & Steel Co.

The Barometer of Business

Weekly Comparison

	Last week	Week before	One mo. ago	One year ago	1913
Business failures ..	365	281	391	326	...
Cash ratio Fed. Res. System %	82.6	82.5	82.4	76.3	...
Loan Rate, 4-6 mos. N. Y. % ..	3¼-3½	3½	4-4¼	5	3½
Aver. 25 industrial shares	$113.29	$113.09	$109.32	$105.02	$59.19
Aver. 25 railroad shares	$68.94	$67.22	$65.60	$59.33	$82.91
Aver. 40 bonds ..	$91.11	$80.68	$80.46	$76.91	$93.00
Car loadings week ended July 5..	759,942	908,355	819,904	850,082	*796,191
Bank debits 246 cities (000 omitted)	$10,111,000	$8,249,329	$9,058,397	$9,782,451	.....

*1920

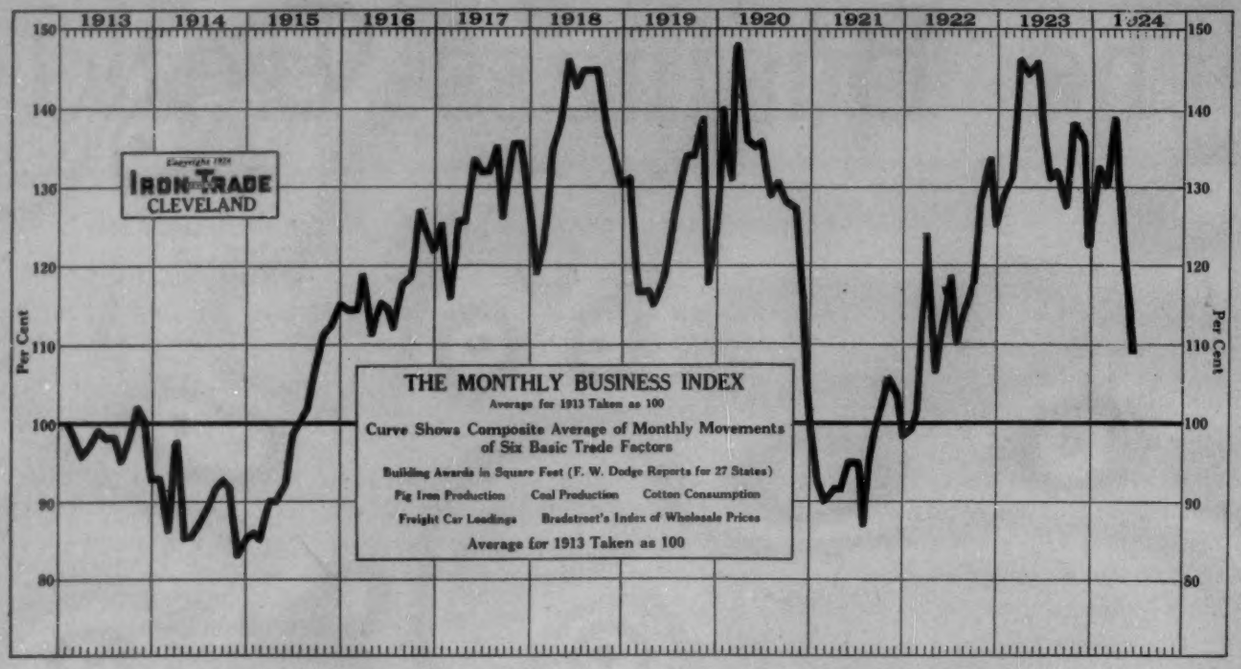
Foreign Exchange (Demand)

	Normal	Last week close	One week before	One month ago	One year ago
Sterling	$4.86	$4.38	$4.37	$4.32	$4.59
Francs	19.3c	5.12c	5.17c	5.37c	5.92c
Lira	19.3c	4.31c	4.32c	4.33c	4.37c

Monthly Comparison

	June	One Month before	One Year ago	1913 Mo. average
Dodge Building awards in 27 states (sq. ft.)	48,064,100	57,708,800	47,512,100	31,250,000
Business failures: Number	1,607	1,816	1,358	1,336
Liabilities ..	$34,099,031	$36,590,907	$28,678,276	$22,732,000
Exports	$307,000,000	$334,949,000	$319,956,953	$233,195,000
Excess of gold imports	$24,913,102	$40,480,000	$18,885,055	†$630,716
Bureau of labor price index ..	144.6	146.9	153.5	100
Bradstreet's price index	132.2	133	141.6	100
Economist's British price index	166.7	166.6	158	100
Nat'l Industrial Con. board living cost index	*161.4	161.8	160.3	‡100
New incorporations	$455,022,400	$519,897,000	$1,403,336,000	$49,301,000
Railroad net earnings	*$60,595,000	$61,821,000	$90,252,900	$59,301,000

†Excess of gold exports. ‡ July, 1914. *May.

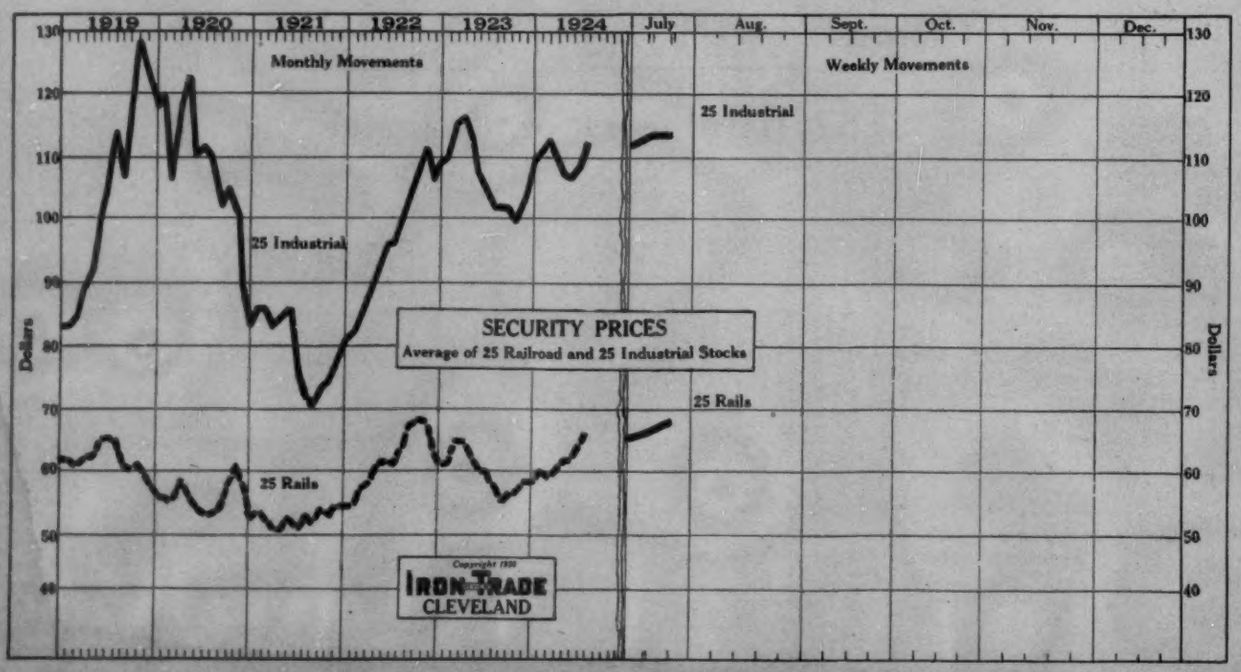


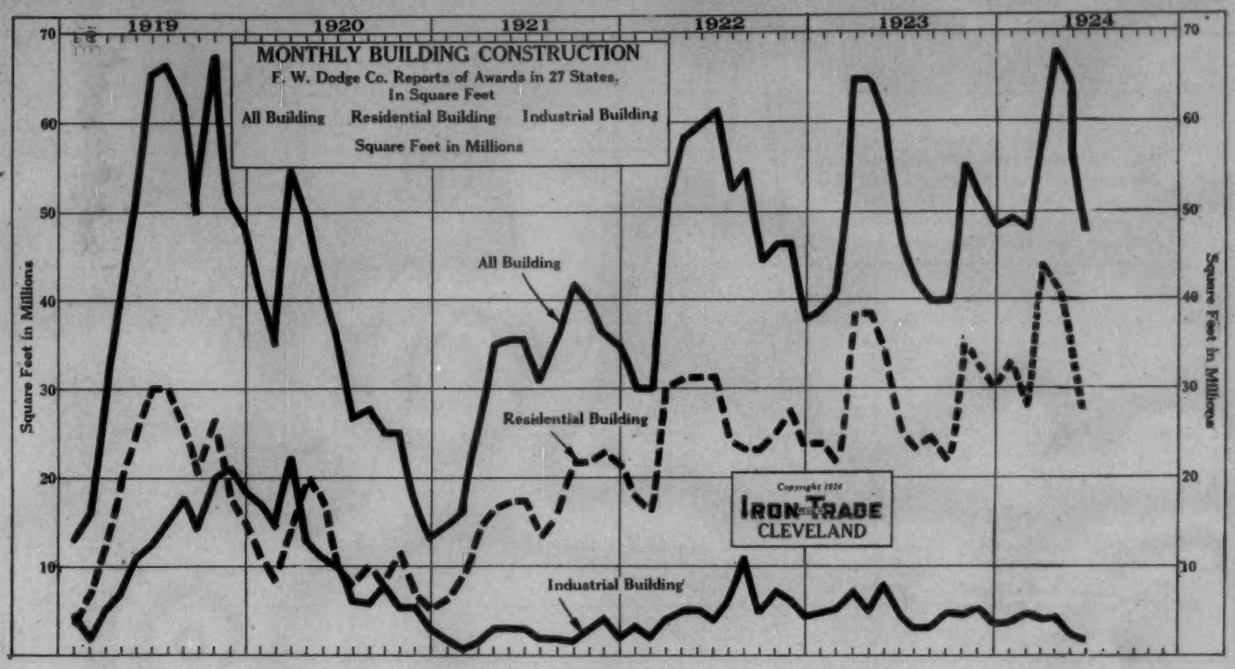
Business Index

GENERAL business activities in June, as measured by the IRON TRADE REVIEW Monthly Business Index, dropped to the lowest point since April, 1922. The Index stood at 109 last month. This was a decline of 11 points from May and of 30 points from the year's peak in March. In June, 1923, the number was 137. In June there were declines in each of the factors comprising the Index. Building construction with a loss of 17 per cent and pig iron output with a loss of 20 per cent showed the chief recessions.

Security Prices

FOR some months the stock market has been staging a contest between the stimulating effect of easy money and the depressing effect of bad trade news. Easy money apparently has had the better of it, and prices have moved steadily upward. The averages of both 25 industrial stocks and 25 railroad shares have climbed about 8 points each from the low point of the year. Railroad and public utility shares have been most active, while industrial issues, though fairly strong, have shown some uncertainty recently.



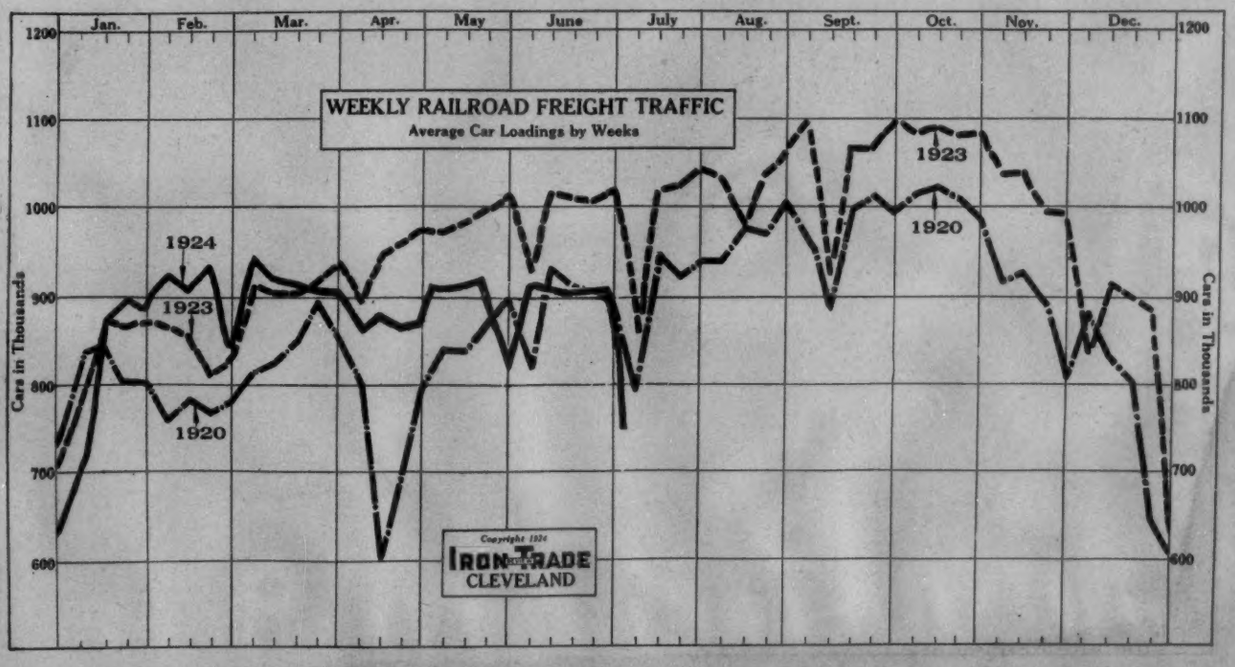


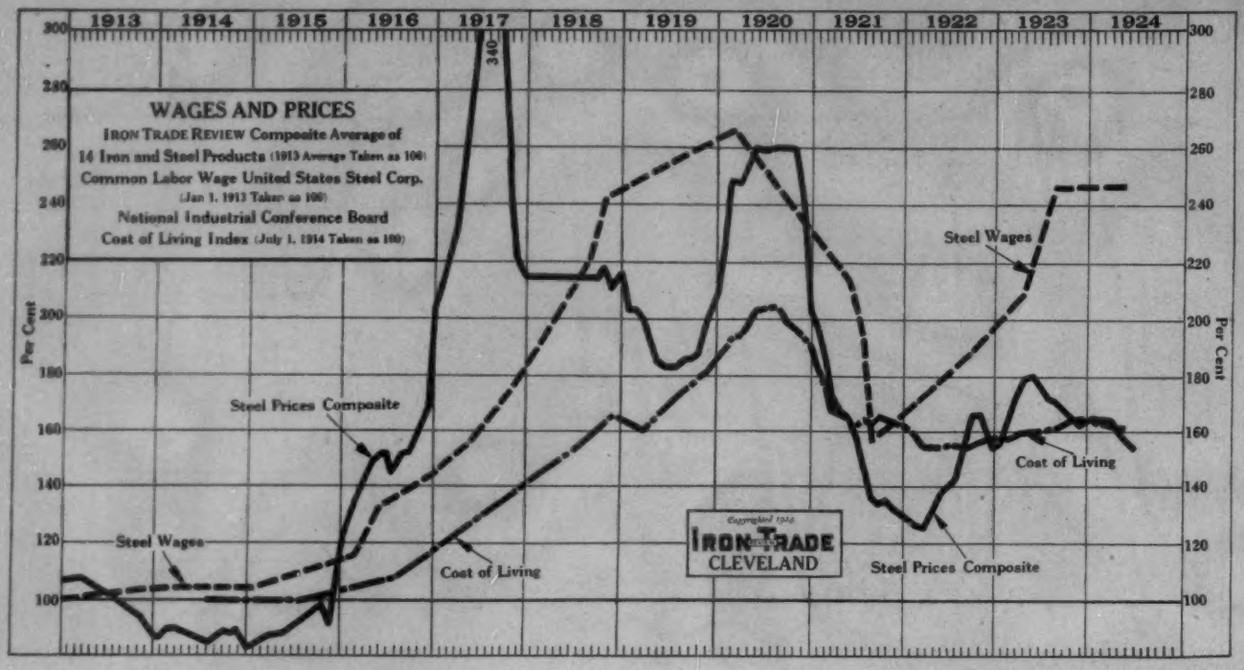
Building Construction

BUILDING construction has held its own surprisingly well compared with last year. In June the total of awards of 48,064,000 square feet in 27 northeastern states, as compiled by the F. W. Dodge Corp., dropped 17 per cent under the total for May. Compared witn June, 1923, however, there was a gain of 1 per cent. Both industrial and residential building was less than in May but residential awards increased 56 per cent over the total for one year before, as shown by the accompanying diagram.

Railroad Traffic

CAR loadings in recent weeks have been showing a slight tendency to increase. In the week of July 4, however, a sharp decline occurred, due to the holiday. The total of 759,942 cars compared with 854,748 cars in the corresponding week of 1923. In 1920 the volume of traffic moved in the same week was 828,907 cars. A significant feature of freight movements recently has been the increase of loadings of grain. This indicates that farmers are marketing their crops under the spur of advancing prices.



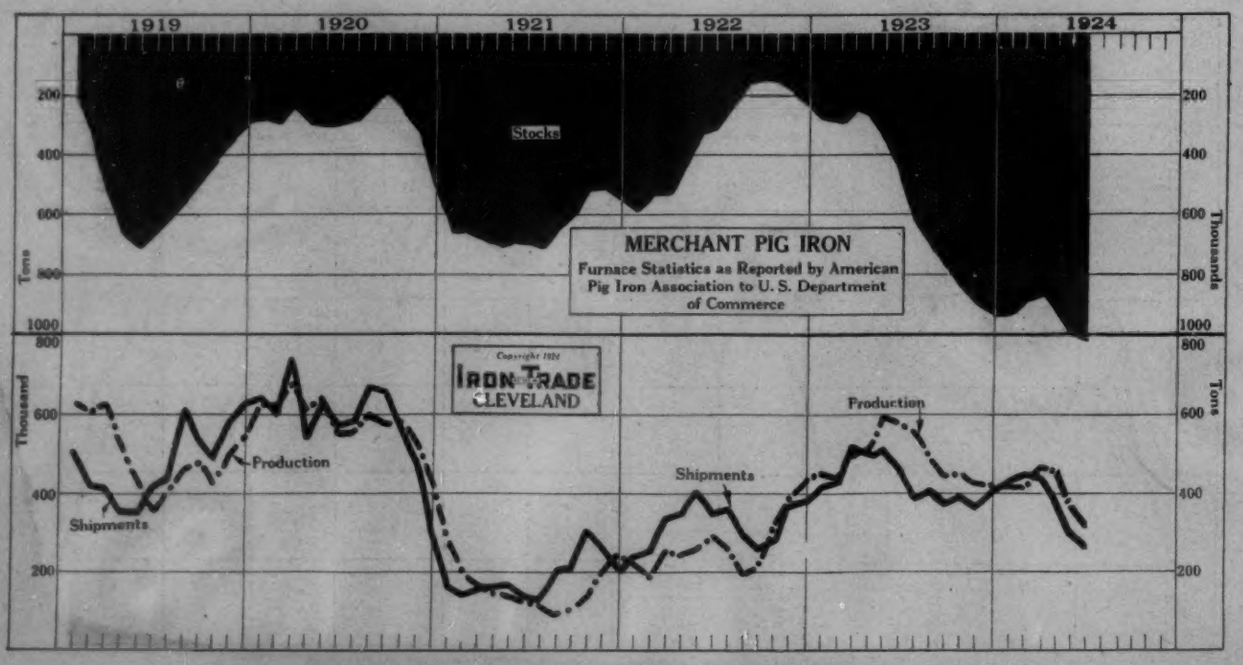


Steel Wages and Prices

WITH this week's issue IRON TRADE REVIEW presents a new chart depicting the relationship existing among the three factors of wages, steel prices and living costs. The wage factor taken is the hourly scale paid to common labor by the United States Steel Corp. Relative to their prewar basis it is clear that wage rates are far above both the cost of living, and steel prices, as measured by the IRON TRADE REVIEW average. Wages are 147 per cent above 1913; prices are 54 per cent above; and living costs, 61 per cent.

Merchant Iron

THE merchant pig iron situation continues to be marked by large stocks. In June as reported by the members of the American Pig Iron association, stocks stood at 1,044,096 tons. This was an increase of 34,278 tons to the highest level ever recorded. In June production fell to 313,417 tons, the lowest point since October, 1922. Shipments of 268,295 tons were the lowest since September, 1923. Sales of 391,114 tons were the best since January and bookings gained for the first time since November.



Manufacturing and Heat Treating Alloy Steel

BY MARCUS A. GROSSMANN

Part II

Heat Treating Alloy Steels

READERS of the chapters on heat treating appearing during the past 10 *months in* IRON TRADE REVIEW *will find the accompanying article of timely importance. This installment and that appearing in last week's issue touch on alloy steels in a general way and therefore constitute an appropriate introduction of Chapter* VIII *of the heat treating series, which will begin in the issue of Aug.* 7 *and continue in the issues of Aug.* 21 *and Sept.* 4. *The chapter deals first with the general principles affecting the heat treatment of alloy steels and then with the detailed procedure for each group of steels such as nickel, chromium, nickel-chrome-vanadium, etc., and including special data on high speed tool steels.*

In the accompanying article, the author who is metallurgist of the Atlas Steel Corp., Dunkirk, N. Y., discusses the factors influencing the heat treatment of alloy steels. The illustrations show a wide variety of installations, Fig. 6 *being presented by the courtesy of Atlas Steel Corp.; Fig.* 7 *by that of the United Alloy Steel Corp.; Fig.* 8 *by the W. S. Rockwell Co.; Fig.* 9 *by the Bellis Heat Treating Co. and Fig.* 10 *by the Leeds & Northrup Co.*

THE last general manufacturing operation that is carried out on alloy steels is the annealing. This almost always is necessary because a machining operation generally precedes the final hardening, and nearly all alloy steels are too hard as rolled or forged, to permit greater ease in machining.

The annealing operation consists of heating the steel slowly to a moderately high temperature, usually about 1400 to 1600 degrees Fahr. holding it at this temperature until it is heated uniformly, and then cooling it slowly. The steel must be heated above its so-called critical point, at which recrystallization takes place, in order to effect thorough softening. Sometimes the steel is placed in the annealing furnace, without protecting it from the flames and gases. This is permissible when enough surface is to be removed later to clear away all scale which is formed. In other cases, such as the one illustrated in Fig. 6, the steel is packed in containers (pipes, in this case) and sealed to exclude all play of furnace gases. Under these conditions no scale is formed and the steel remains clean.

If alloy steels are to be cold-drawn it generally will be found that more frequent anneals are required in the series of drawing operations. Alloy steels are inherently harder than soft steels, and appear to harden in the drawing operation more rapidly, so that they must be annealed at frequent in-

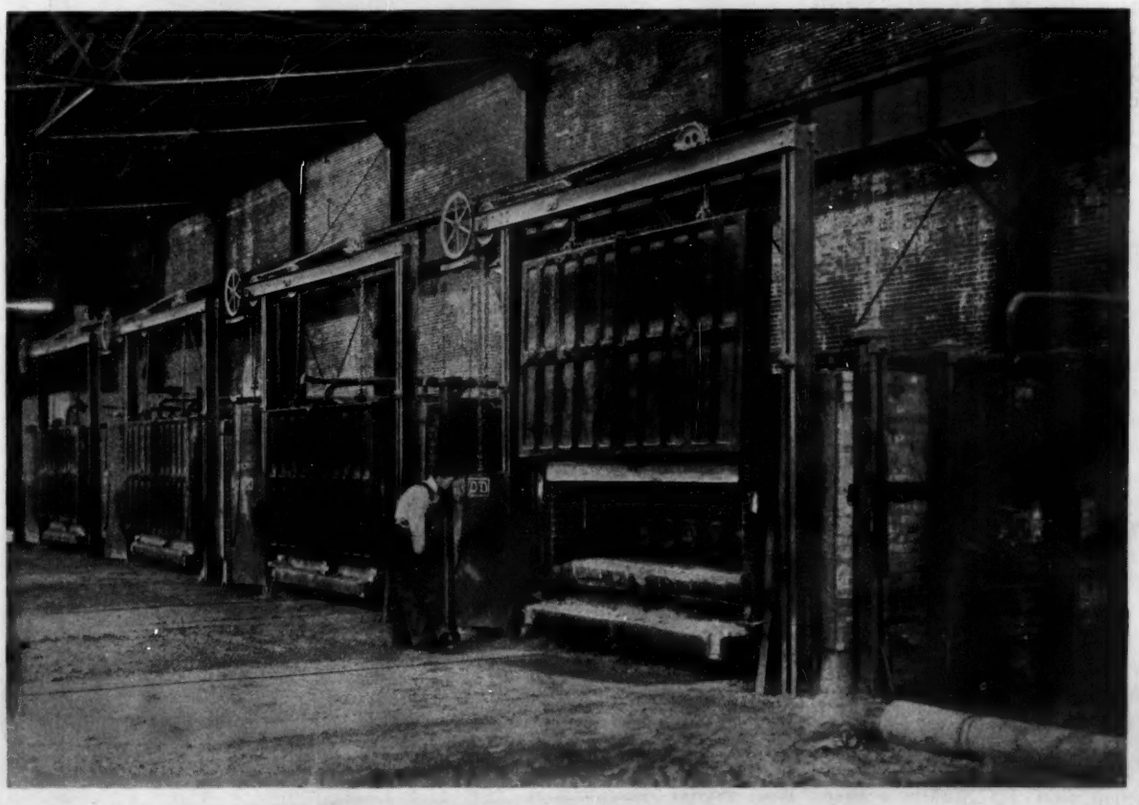


FIG. 6—A BATTERY OF CAR-BOTTOM FURNACES FOR ANNEALING STEEL BARS

FIG. 7—COMPLETE AUTOMATIC INSTALLATION FOR HEAT TREATING BARS OF ALLOY STEEL

tervals to permit the successively finer draws.

When the steel has come through these various manufacturing operations and has been brought to the form of a finished article, it is ready for its final treatment, the hardening. As previously indicated, the hardening treatment consists in heating the steel above its critical point which is usually in the neighborhood of 1400 to 1600 degrees Fahr. and cooling the steel rapidly by plunging it into water or oil. After a hardening operation, steel is generally somewhat brittle, so that it is advisable to reheat the steel to a low temperature to impart some toughness without destroying the hardness.

The whole problem of heat treatment is the efficient and accurate carrying-out of this combination of treatments, hardening and reheating. The variations in procedure are due to variations in nature of steel, in size of product and in results desired.

For small articles, especially when they are of a miscellaneous nature with respect to composition and to shape, it is convenient to use small hand furnaces which can be regulated at will. The pieces to be treated are placed in the furnace and are transferred from there to the quenching tanks by hand. Large objects like guns or armor plate, while far too

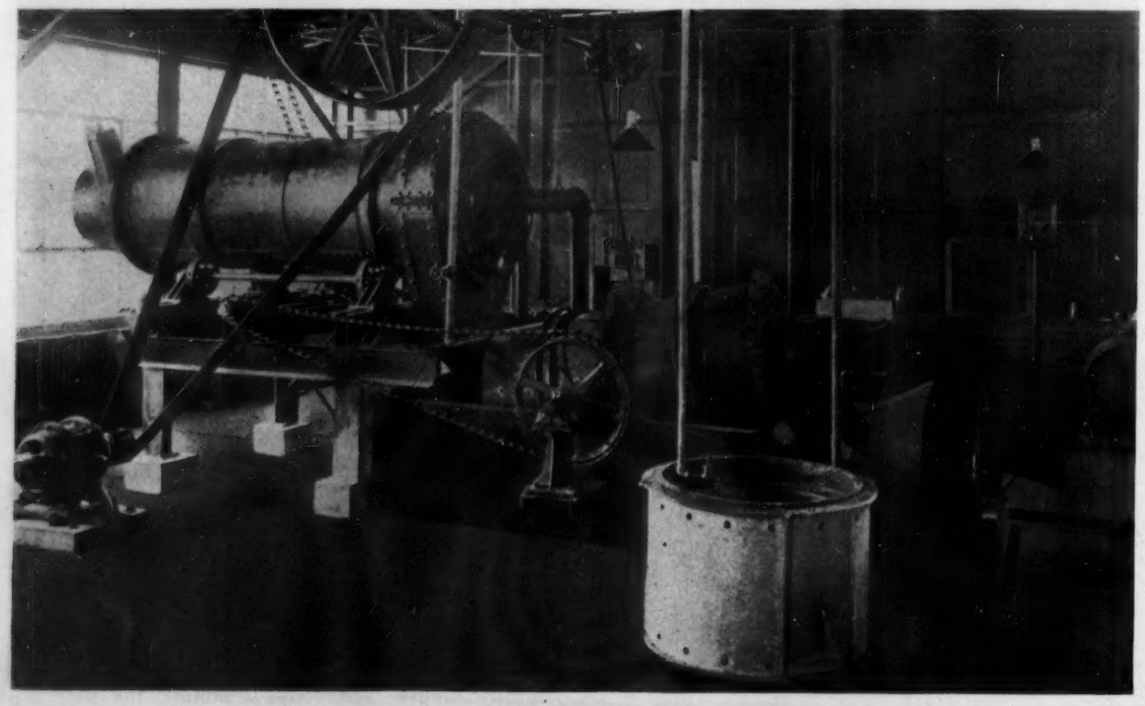


FIG. 8—ROTARY FURNACES AND INSTALLATION FOR HARDENING ALLOY STEEL

large for manual handling, still are treated individually and each piece is a problem in itself.

For many kinds of mass production, it is possible to install mechanical heat-treating equipment with a considerable resultant saving in labor. In the case of long bars and axles, for example, a principle is applied which is followed in almost all mechanical equipment of this kind. The steel is fed at a constant rate into a furnace chamber whose temperature varies progressively upward from the charging end to the discharge end. When the steel, still fed mechanically, has reached this discharge end, it drops into the quenching tank. From here it is conveyed into the reheating, drawing or tempering furnace, and finally is discharged. Such a furnace for long bars is shown in Fig. 7.

Handling Is Automatic

An apparatus operating on the same principles is shown in Fig. 8, and is intended for use with small objects such as ball bearings. The steel pieces follow a long path determined by the helix of the rotating furnace and at the end of this path are discharged, quenched and reheated after the usual manner. Frequently a hydraulic pusher is used for feeding steel slowly and regularly into a hardening furnace.

Heat treating methods previously mentioned depend on holding the hardening furnace at some temperature which exceeds by a safe margin the critical temperature of the steel. A different principle is employed in the furnaces shown in Fig. 10. A pyrometer, placed close to the steel within the furnace, records on a visible chart the time when the critical temperature of the steel is passed. The method, therefore, indicates accurately just when the steel is to be quenched.

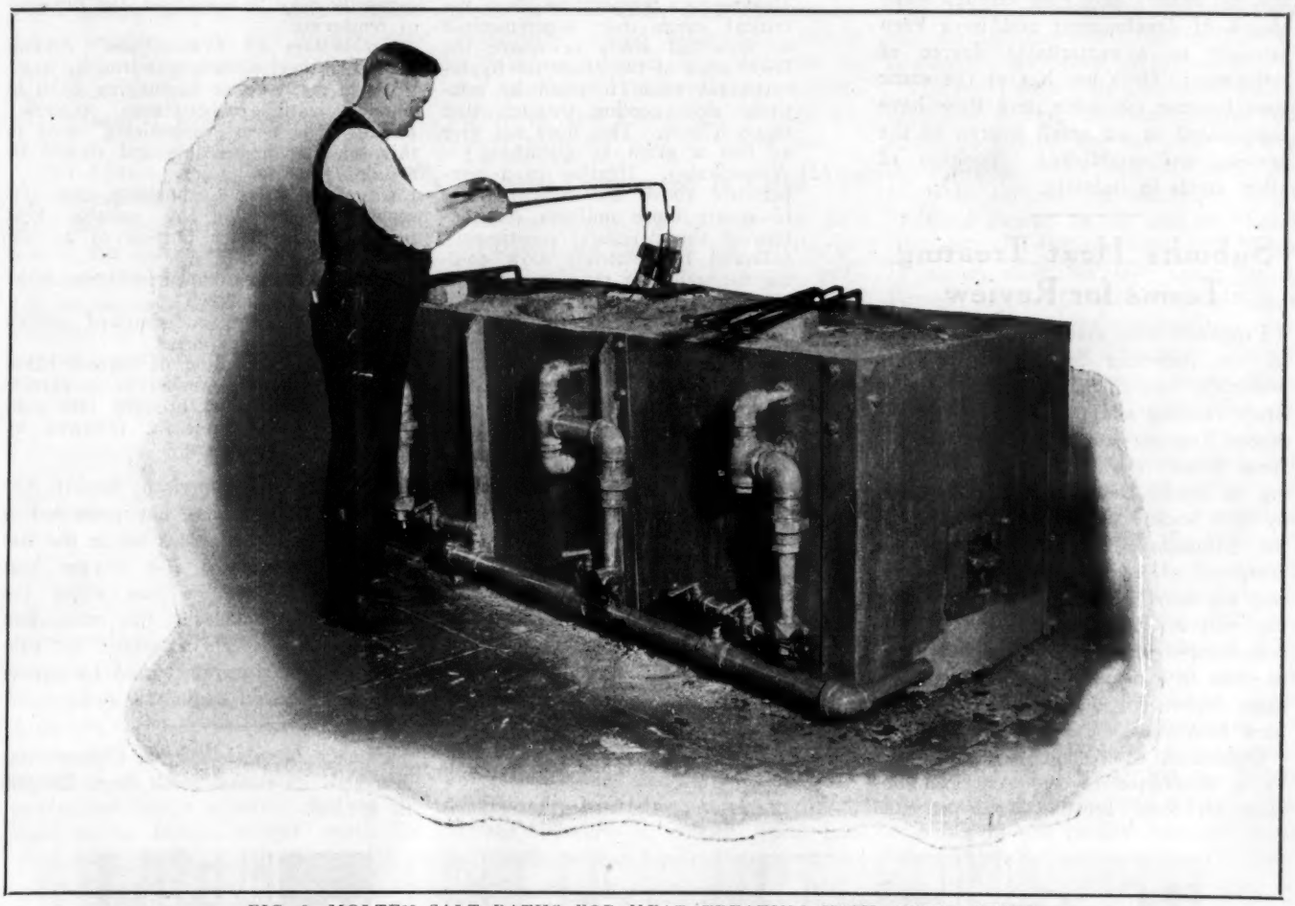


FIG. 9—MOLTEN SALT BATHS FOR HEAT TREATING HIGH SPEED STEEL

The methods of heat treatment discussed so far have to do with the steels containing but a moderate amount of alloy. Heat treatment of high-speed steels presents a somewhat different problem, for it is necessary to operate in a much higher range of temperature. The problem has been met by the use of suitable refractories in the construction of heat treating furnaces, and the devising of rugged pyrometers for temperature control.

As is the case with other phases of heat treating, too, molten baths are desirable from the standpoint of uniformity in heating high-speed steels for hardening. Fig. 9 shows a series of molten salt baths which may be held in the proper temperature ranges and which serve as reservoirs of heat in which the high-speed steels are immersed in order to bring them to the proper temperatures for hardening.

How Toughness Is Imparted

In some applications of alloy steel, typified by gears, cams, and some bearings, it is desirable that the steel part shall have a hard wearing surface and yet be tough within The problem is met by making the piece from low-carbon steel, which will not harden in heat treatment, and then impregnating the surface with enough carbon to cause it to respond to heat treatment. This "carburizing" treatment consists in packing the finished piece in carbon-containing materials such as charcoal or bone-ash, and heating it for a number of hours at a suitably high temperature, again above its critical point. The surface in subsequent heat treatment then acts like a high-carbon steel while the core remains unaffected and consequently, retains its desirable mechanical toughness.

In some cases adequate carburizing may be effected, with a considerable saving in time, by resorting to the use of potassium cyanide. Generally the piece to be carburized is immersed in a bath of molten cyanide, for perhaps a minute, the time depending on the size of the piece to be hardened.

At times the cyanide in lump or powder form is applied locally to the heated piece. The hardness is brought out by subsequent heat treatment.

Finally, reference must be made to a new industry which has developed as a result of the widespread increase in the use of heat-treated alloy steels. Achievement of uniformity in mechanical properties of heat treated steels postulates regularity in heat treatment, and this has become possible only through temperature control with pyrometers. Since devised a few decades ago, pyrometers have gone through many stages of development and have been brought to a remarkable degree of refinement. Their use has at the same time become extensive, and they have contributed in no small degree to the present well-established position of alloy steels in industry.

Submits Heat Treating Terms for Review

Proposals were made a few years ago by the American Society for Testing Materials, the American Society for Steel Treating and the Society of Automotive Engineers to develop a list of uniform terms relating to the heat treating of steel. Definitions were prepared by each society but a wide variation in the terminology existed. A committee composed of a member of each society, was appointed to endeavor to harmonize the various heat treating terms. This committee recently found it impossible to come to a definite agreement and separate reports to the respective societies have been made.

Definitions of certain terms prepared by a committee of the American Society for Steel Treating were presented on page 916 of the April 3, 1924 issue of IRON TRADE REVIEW. The following terms submitted to the iron and steel division, standards committee, Society of Automotive Engineers are presented for comparison:

Heat Treatment. The change, or the series of changes, in temperature, and also the rate of change from one temperature to another, brought about to secure certain desired conditions or properties in a substance.

Annealing. A form of heat treatment for the purpose of softening, or relieving strains, or both.

(1) *Annealing with Grain Refinement.* Heating to a temperature above the critical range for hypereutectoid or eutectoid steels or above the lower limit of the range for hypereuctectoid steels followed by relatively slow cooling through that range. (Note. This does not give as fine a grain as quenching.)

(2) *Normalizing.* Heating to a temperature above the critical range to secure more uniform distribution of the structural constituents, followed by relatively slow cooling through that range in still air at room temperature. (Note. This term is generally restricted to such treatment as applied to hypereuctectoid steels).

(3) *Spheroidizing.* Prolonged heating at a temperature slightly below the critical range to produce coagulation of the cementite into globules, usually followed by relatively slow cooling.

(4) *For Softening or Relieving Strains.* Heating to a temperature not necessarily sufficient to refine the grain, followed by relatively slow cooling if necessary.

(5) *Drawing.* Reheating, after quenching, to some temperature below the critical range, followed by any permissible rate of cooling. (Note. The use of this term to indicate heating without previous quenching should be avoided; the term *annealing* should be employed in such a case).

(6) *Tempering.* Reheating, after hardening by quenching, to some temperature considerably below the critical range, followed by any permissible rate of cooling. (Notes. Drawing and tempering are practically synonymous in commercial practice. By "critical range" is meant the A_c range on heating and the A_r range on cooling. In view of the different applications of the term *annealing,* it is recommended that the specific treatment intended be stated unless clearly indicated).

Quenching. Rapid cooling.

Quenching for Hardening. Rapid cooling, through the critical range, to a temperature not exceeding that which subsequently may be employed for drawing or tempering.

Carburizing by Cementation. Adding carbon to steel or wrought iron by heatting the metal below its melting point in contact with carbonaceous material. (Note. The term "carbonizing" used in this sense is undesirable and should be avoided).

Case-Hardening. Carburizing, and subsequently hardening by suitable heat treatment, the outer portion of an object.

Case. The outer, carburized portion of a case-hardened object.

Core. The inner, uncarburized portion of a case-hardened object.

Cyaniding. A method of surface hardening whereby the object, or a portion of it, is heated and brought into contact with a cyanide salt, followed by suitable heat treatment.

Thus far the American Society for Testing Materials has not presented a separate list of definitions but in the last report of committee A-4 on the heat treatment of steel, it was stated the definitions proposed by the other two societies have been submitted to subcommittee VI for review and for report back to the main committee A-4.

Chicago Metal Mfg. Co., Chicago, has decreased its capital stock from $200,000 to $51,800.

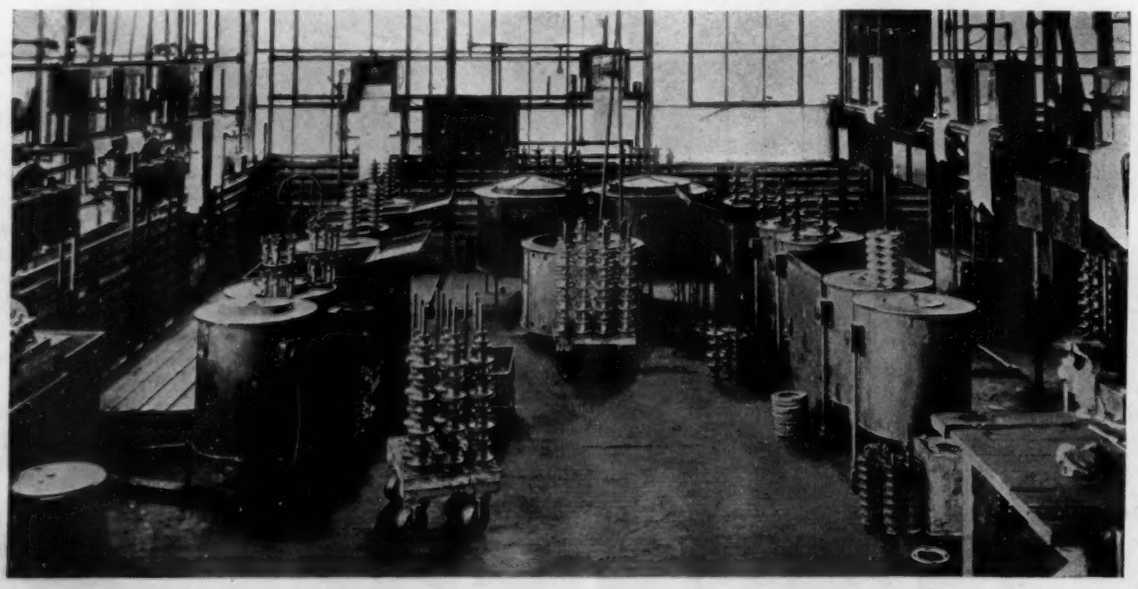


FIG. 10—CYLINDRICAL FURNACE WITH PYROMETRIC INDICATION OF PROPER TIME TO QUENCH

Power Needs in America Expand

Steel Industry in This Country Consumes 12,400,000 Tons of Coal a Year for Power Generation—Present Tendency Toward Electrification of Rolling Mill Trains—Interchanging Power with Public Electric Companies Affords Mutual Saving

BY BARTON R. SHOVER

SECOND only in importance to the supply of raw materials for making iron and steel, is power, whether human or mechanical, and the tendency of man to shirk physical labor together with the growing demand for the product and the increasing cost of fuel make the problem of mechanical power one of vital interest.

The figures in Table 1, taken from the statistical report of the American Iron and Steel institute for 1922 upon which the power estimates are based, will impress even the uninitiated with the importance and amount of power required by this industry. The average and maximum productions for the 10 years, 1913 to 1922, follow:

Averages

	Net tons
Coke	44,699,261
	Tons
Pig iron	31,317,464
Ingots	34,082,495
Rolled products	26,228,363

Maximum

	Net tons
Coke, 1918	56,478,372
	Tons
Pig iron, 1916	39,434,797
Ingots, 1917	43,619,200
Rolled products, 1917	33,067,700

Accurate information on power conditions in the steel industry is difficult to secure, as many concerns think that secrecy should be maintained on all matters pertaining to steel production, while others feel that the good to be derived is not worth the trouble involved.

Professors Ely and Rittman of the Carnegie institute, have published certain findings in regard to the power requirements of the Pittsburgh district for the iron and steel industry, from which report the following average figures for the 10 years, 1911 to 1920, are taken:

Annual output steel ingots	11,980,000
Coal used under boilers	7,095,000
Coal per ton of ingots	0.5922
Ration of coal to blast furnace gas used	60 to 40
Coal per ton of ingots	0.355
	Cubic feet
Blast furnace gas per ton of ingots	71,600

In addition to the foregoing, which covers coal used by the steel companies, the two public service companies in this district supplied a total of 140,100,000 kilowatt hours for power only to the steel industry. Their average coal consumption was 1.68 pounds per kilowatt hour delivered to the switchboard, which at the transmission efficiency used later in this paper in connection with "power requirements" would mean 1.84 pounds of coal per kilowatt hour delivered to the customer. Total coal per ton of ingots in the Pittsburgh district for power purposes only is 0.3646 tons.

Coal Consumption Is Large

As practically all varieties of finished steel are made in the Pittsburgh district, whose output is nearly one-half of the total, it is fair to assume that the foregoing figures are representative. On this basis the steel industry consumed, for power purposes only, more than 12,400,000 tons of coal per year for the average production, over 15,900,000 tons for maximum production, and should all plants operate to capacity, nearly 21,400,000 tons.

From the last complete report of the United States bureau of census, which is for 1919, Table II has been prepared. In this table "Number of Units" represents the number of engines or motors installed. "Rated Horse Power" represents the total rated horsepower of the units irrespective of the amount of power or horsepower hours generated or used. "Other Power" is chiefly from line shafting extended from adjacent works.

From data collected by the Association of Iron and Steel Electrical Engineers for 1923 the ratio of the horsepower of prime movers driving electric generators to the horsepower of motors installed is 0.59 to 1. A study of the data submitted by different companies developed the fact that the more completely the plant is electrified, the higher is the ratio between generators and motor capacity; in other words, the better is the load factor of the motor installation. Some of the older plants where motors were used for cranes, tables, etc., only, had a ratio as low as 1 to 7.

The constantly increasing application of motors since 1909 means that the generator capacity for 1919 was less in proportion to the installed motor capacity than it was in 1923 and materially less in 1909, but because no data are available for these years, the ratio for 1923 is used in arriving at the figures for "Direct Power," although there is no question that the increase of direct power as shown is thus made considerably greater than was actually the case. "Other Power" is assumed as being applied direct.

"Direct Power" also includes power used for driving air-compressors and hydraulic pumps, but the total amount is relatively small and no data are available for its segregation. Total "Applied Power" is the sum of "Total Electric" and "Direct Power." Table II shows that "Water" and "Other Power" are not used in sufficient amounts to be given consideration, and that practically all "Primary Power" generated in the plants comes either from steam or internal combustion engines.

While reciprocating engines still comprise the larger proportion of power units, the turbine is coming more and more into use. In 1909, the turbine was not considered of enough importance to be listed separately in the census report, but the 1919 report gives 955 units, aggregating 893,884 horsepower, or 21 per cent of the total steam power listed. Two manufacturers of turbo-generators report records of 334 units of their make ranging in size from 300 to 17,000 kilowatts, and totaling 908,425 kilowatts as being in use in the iron and steel industry at the end of 1923. Of these units 66, totaling 357,375 kilowatts, or 39 per cent, have been installed since 1918.

The 160 per cent increase in the capacity of internal combustion engines shown in Table II would, alone, indicate a radical tendency in that direction, but conditions have changed. The years 1905 to 1914 might be termed the gas engine era in the development of steel works power, since the major portion of the total capacity was installed during that period. In 1919, there were 287 gas engines totaling 542,462 horsepower, or 61 per cent of the capacity of the turbines and only 11 per cent of the total plant power.

Increase in speed, capacity and efficiency of the turbine, together with its lessening cost per horsepower, have swung the tendency toward it, and close inquiry shows the installation

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Abstract of a paper presented at the first world power conference held in London, Eng., June 30 to July 14. The author, Barton R. Shover, is consulting engineer, Pittsburgh.

of only five gas engine generating units aggregating 21,140 kilowatt capacity with no blowing units since 1918. This capacity, compared with the 357,375 kilowatt turbo-generators previously mentioned as having been installed during the same period, clearly shows which method of power generation is at present preferred. The advantage which the internal combustion engine has in regard to heat efficiency will probably bring it into favor again when fuel has advanced a certain amount in cost (apparently to about $10 per ton) particularly if the installation cost can be reduced and reliability increased, but until they occur the gas engine is not likely to be restored to favor in America.

Table I

Coke, Pig Iron and Steel Output in U. S. 1922

	Production	Capacity
By-product coke	28,550,545 net tons[1]	
Other coke	8,573,467 net tons	
Total	37,124,012 net tons	
Pig iron	27,219,904 tons	52,686,820 tons
Ingots	34,568,418 tons	58,644,655 tons
Rolled Products.		
Rails	2,171,776 tons	
Plates	3,419,920 tons	
Sheets	4,548,477 tons	
Nail and spike bar	21,969 tons	
Wire rods	2,654,741 tons	
Structural shapes	2,718,768 tons	
Merchant bars	4,554,474 tons	
Skelp	2,859,095 tons	
Hoops	222,139 tons	
Bands and cotton ties	271,101 tons	
Splice and tie plate bars	605,688 tons	
Sheet piling	13,220 tons	
Railroad ties	14,811 tons	
Forging blooms	326,303 tons	
Blooms, sheet bar, etc., exported	11,299 tons	
All other rolled products	2,038,223 tons	
Total	26,452,004 tons	

[1] "Net ton" is 2,000 lbs. unless otherwise specified; "tons" means 2,240 lbs. (1,016 kg.)

Motor Capacity Shows Gain

It will be noted from Table II that while the increase in the total capacity of motors operated from plant power was 1,113,576 horsepower, or 140 per cent, the increase in capacity of motors operated from purchased power was 727,475 horsepower, or 949 per cent. The increase in capacity of motors operated from purchased power being so nearly equal to that of motors operated from plant power shows that purchased power must be considered as part of the power system, and this is further greatly emphasized by the difference in the rates of increase, indicating the tendency to depend more and more on electric power generated outside the works, principally by public service companies.

An illustration is the case of one large plant now purchasing considerable power, which has recently made a 10-year contract with a public service company to furnish power for replacing 12 mill engines, which change will completely electrify the plant with the exception of two mills.

Coal Saving Is Indicated

Table I shows that while some by-product fuel and waste heat is used for power generation, a larger quantity of coal is consumed. That there is more than sufficient heat available for power alone in plants having coke ovens and blast furnaces is shown in the following calculations. These figures are general and some assumptions were necessary, but they are believed to be fair. The figures used for power requirements, efficiencies, etc., taken from the Association of Iron and Steel Electrical Engineers' charts are averages from actual practice, and the whole picture together with the deductions show the possibilities of saving immense amounts of coal.

Assume that all power, except for blowing the blast furnaces, is applied electrically, that all steel is made in open-hearth furnaces, and that all coke is made in by-product ovens. The tonnages of coke, pig, etc., are the United States production for 1922.

Power Requirements	Metric tons	Kilowatt hours
Coke	37,124,012	111,372,036
Pig iron	27,219,904	435,518,564
Ingots	34,568,418	241,978,926
Blooms	30,420,208	790,925,408
Billets	11,432,041	354,393,271
Sheet bar	5,228,131	245,722,198
Finished steel	26,452,004	2,359,293,524
Total		4,439,203,927
Call it		4,440,000,000

The foregoing figures are for power delivered to the motors. Alternating current power is transmitted direct or by long distance high-tension lines with step-up and step-down transformers, and some of it is converted to direct current. Some power is generated and delivered as direct current.

To obtain coal requirements, generation, transmission and conversion losses must be considered. Assume all power is generated alternating current by turbo-generators and that all power is transmitted through high-tension long-distance lines with step-up and step-down transformers. Under these assumptions, the losses will be at least as much as they are under actual conditions.

The power chart shows that 1.73 pounds of coal will deliver 3115 B.t.u. to the motors, therefore, it will require 1.9 or say 2 pounds of coal to deliver 3421 B.t.u. or 1 kilowatt hour.

$$\frac{4,440,000,000 \times 2}{2,240} = 3,964,287 \text{ tons}$$

Call it 4,000,000 tons

That is, the coal equivalent of 4,000,000 tons should furnish all the power required for making the United States 1922 production of coke, pig and ingots, and rolling the ingots into finished product. The total coal or its equivalent required for all purposes except for making coke is as follows:

	Tons
Power	4,000,000
Ingots	9,644,589
Heating	3,060,896
Total	16,705,485

The available fuel per net ton of coke, per ton of pig iron and per ton of ingots respectively, reduced to a coal equivalent of 13,500 B.t.u. is as follows:

	Tons
By-product coke ovens	0.35
Blast furnaces	0.29
Open-hearth furnaces	0.057

1922 Production

		Tons
Pig iron	27,219,904 × 0.29 =	7,893,772
Coke	37,124,012 × 0.35 =	12,993,404
Ingots	34,568,418 × 0.057 =	1,970,400
Total coal equivalent of waste heat		22,857,576
Total steel requirements		16,705,485
Excess		6,152,091

This would mean that on an average twice as much waste heat alone as should be required is used for power purposes, to say nothing of half-as-much coal again in addition or a total of five times the theoretical requirements, which offers a fertile field for the development of future economies. While reasonable excuse hardly can be offered for the waste of fuel for power purposes, the theoretical figures showing an excess of waste heat for all purposes cannot be realized in practice.

Some Waste Unavoidable

Some coke ovens are not located in proximity to steel works, and sell their surplus gas for domestic purposes. Since a portion of the tar, and some-

times the gas also can be sold for more than the cost of its coal equivalent, only a part of it, even where the ovens are connected with steel works, may be used as fuel; consequently, even if all coke were by-product, it is doubtful if over one-half the tar would be commercially available for use in the steel industry.

Many of the merchant blast furnaces are of small capacity and are located in outlying districts where there is no use for the waste heat, which, consequently, must be lost. It is highly improbable that, even given the best conditions of equipment, there would be sufficient waste heat for operating the entire industry, but it is possible for some well balanced plants to closely approach the ideal condition, that is where the only coal required for the entire works would be for the coke ovens.

Opportunity for Saving Is Offered

Coke ovens and blast furnace operate continuously, whereas steel works and rolling mills normally are idle over the week end. Consequently, about one-seventh of the waste heat from the principal sources is given off when there is no use for it by its largest consumers, which also means that even in the ideal plant, there would probably be a shortage of waste heat during six days of the week. This condition can be met by tying the electric power system of the plant to the lines of a local public service company and interchanging power with them. The steel company would take a comparatively small average amount of power during the week, and over week ends the public service company could shut down part of its capacity, thus, in the final analysis, saving the waste heat from the coke ovens and blast furnaces during that period. At least three installations exist where this arrangement is in force and two others where negotiations toward this end are now in progress.

An inspection of almost any of the present plants will disclose opportunities of material saving in fuel with little or no capital expenditure, but the older plants can be made efficient in this respect only by the expenditure of considerable amounts of money. This fact has caused many companies to act slowly, but the realization of the present waste of natural resources and the savings in cost shown by modern equipment apparently have awakened the industry to the advisability of thoroughly revamping existing wasteful methods, and if this interest results in only maintaining the rate of progress shown during the past few years, the waste will be reduced at least one-half within the next decade.

Hydraulic Power Small Total

Power is applied direct or through electricity, compressed air or hydraulic pressure. Compressed air never was used to any considerable extent in the steel industry except for chipping hammers and riveters, for which purpose it still holds its own although the field has to some extent been invaded by electrical appliances. The amount of power so transmitted is negligible when compared with the total requirements.

Until the advent of the electric motor, hydraulic power was indispensable for the operation of cranes, shears, transfers and other mechanically operated auxiliary apparatus and it does possess the advantages over electric drive of first cost in most cases and as insurance against wrecking of apparatus subject to abuse. The low efficiency of hydraulic transmission together with trouble with control valves freezing up in cold weather, etc., have resulted in the substitution of a considerable amount of electric drive in the older installations, while for a number of years, unless handicapped by lack of funds, new plants have installed practically no hydraulic power, and all of the best types have totally abandoned its use. Like compressed air, the amount of power transmitted by this means is small in comparison with the total.

By direct drive is meant the operation of apparatus by the original prime mover, whether direct connected or operating through gears, belts, shafting, etc., and was the original method of mechanically operating iron and steel works machinery. Because of its lack of overload capacity and inability to adapt itself to sudden changes in loads, the internal combustion engine is not suitable for driving roll trains or other apparatus of this character, but it is well adapted for driving the tubs of reciprocating blast furnace blowers.

Due to lower first cost and convenience of operation the turbo-blower has of late years made considerable headway and while it can show advantages in every respect over the reciprocating steam engine for blowing blast furnaces, the gas engine surpasses it in thermal efficiency, in fact there is still a question in spite of higher, first costs and operating expense, as to which of the two types of blowing units will show the better returns on the investment required.

The first turbo-blower used for blast furnaces was installed in 1909, and up to date 53 such units have been installed for blowing blast furnaces and seven for bessemer converters. About 25 turbo compressors are used in the iron and steel industry for furnishing air at 100 pounds pressure or more. The popularity of this form of blowing unit is shown by the claim of one manufacturer that during the past five years out of a total of 22 blowing units installed at blast furnaces, 20 were of the turbo type, the remaining two being reciprocating steam engines. One large plant having reciprocating steam and gas engines recently has placed an order for six turbo-blowers to replace reciprocating steam blowers, and other similar changes are being given careful consideration.

Roll Train Driven by Turbine

In 1914 a turbine was direct connected to a roll train, and although this outfit is still operating, it has never been duplicated, consequently it

Table II

Comparison of Power Conditions 1909 and 1919

	Number of Power Units				Rates Horse Power			
	1909	1919	Per Cent Change Inc.	Dec.	1909	1919	Per Cent Change Inc.	Dec.
No. establishments	710	784	10-42	..	.....	.....	....	....
Plant Power.								
Steam	8,728	7,877	.....	10	3,061,332	4,217,888	38	....
Internal combustion	208	287	38	..	208,077	542,550	161	....
Water	81	53	.....	35	8,289	10,051	21	....
Total	9,017	8,217	.....	9	3,277,698	4,770,489	46	....
Purchased Power.								
Electric	2,795	25,350	807	..	76,695	804,170	949	....
Other	.....	150	.....	..	120	2,925	2,337	....
Total	2,795	25,500	812	..	76,815	807,095	951	....
Total primary power	11,812	33,717	110	..	3,354,513	5,577,584	66	....
Electric from plant power	29,557	71,490	185	..	795,028	1,908,604	140	....
Total electric	32,352	96,840	206	..	871,723	2,712,774	211	....
Used direct	.....	.....	.....	..	2,804,975	3,636,633	30	....
Total applied power	.....	.....	.....	..	3,676,698	6,349,407	46	....
Per cent. electric to applied	.....	.....	.....	..	24	43	80	....
Per cent. direct to applied	.....	.....	.....	..	76	57	....	25

can be assumed that the results of such drive are not satisfactory.

While the first use of the electric motor in the steel industry in America, reported to the Association of Iron and Steel Electrical Engineers, was the installation of three small units in 1891, it was not until 1905 that the first application of motor drive was made to roll trains. This installation consisted of two 1500 horsepower, 125 revolutions per minute direct current motors on the No. 3 rail mill, Edgar Thomson works of the Carnegie Steel Co. which motors still are giving excellent service.

The first mill of any size to be operated by alternating current motors was at the Gary works of the Indiana Steel Co. in January, 1909. This equipment consisted of two 2000 horsepower motors driving two-high 40-inch slow-speed blooming mills through trains of gears; one 6000 horsepower, motor direct coupled to a 40-inch three-high blooming mill; two 6000 horsepower and one 2000 horsepower direct coupled to three-high 28-inch rail mill roll trains. These motors were 6600 volt, and up to March 1, 1924, have rolled 7,335,656 tons of rails.

Three electric manufacturing companies report having furnished a total of 914 motors over 300 horsepower capacity and aggregating 954,410 horsepower for driving nonreversing hot mills in steel works. The early motors were all slow speed, direct coupled to the roll trains, but the perfecting of large gear reductions has so changed this situation that approximately 90 per cent of the roll train motors installed in 1923 were comparatively high speed, driving the trains through gearing.

Tendency Toward Reversing Motors

The first motor applied to a reversing mill in America was installed on the 36-inch slabbing mill at the South works of the Illinois Steel Co. in 1906 and this motor is still in operation. To date the three larger manufacturing companies have furnished a total of 50 reversing drives totaling 201,800 horsepower and there are in addition a few such motors supplied by other makers. While the number and capacity of reversing steam engines in use surpasses those figures for motors, the tendency is shown by the fact that since 1918 there has been a total of 19 reversing motors installed as compared with only two reversing steam engine drives.

It is not within the scope of this paper to argue the merits of the different kinds of power units, but the tendency towards the use of electric motors as opposed to steam engines is too marked to allow passing without notice. Mistakes were made in regard to the size in the early installations, some motors being too large and others too small, but sufficient data have now been collected so that there is no difficulty in accurately determining the proper size of a motor, provided the governing data are known.

In 1923, one electric manufacturing company furnished nine motors aggregating 27,650 horsepower to replace existing steam engines driving roll trains, while two electric companies report having furnished a total of 47 motors aggregating 103,565 horsepower for this purpose, and against this showing not a single motor driving roll trains has been replaced by any other kind of power. A number of steel officials who have been responsible for the installation of engine drives during the past decade have expressed themselves as regretting their decision, but no one remembers having heard of such a statement in regard to a motor.

Motor Condition Change Little

Many theoretical calculations have been made, also some tests, which show that the thermal efficiency of the direct steam drive is equal or even superior to that of the motor, but such claims are based on test conditions. Factors such as tight, well insulated steam lines, proper valve setting, high vacuum, etc., are all assumed to be perfect, but they all can and do deteriorate in practice and usually little attention is given to them so long as the engine will run, consequently the thermal efficiency of the steam drive is seldom if ever, maintained at the highest point. On the other hand, practically nothing can happen to the transmission lines, the motor or its equipment, which would lower the efficiency and still allow operation, consequently the motor is always operating under test conditions.

From the data, estimates and general history of the art as outlined, the present and probable future tendency of power generation and application in the iron and steel industry is toward the electrification of all power-driven apparatus except blast furnace blowers; the substitution of turbo-blowers, or possibly gas engines, for reciprocating steam blowing engines; the purchase of power requirements by plants which have no waste heat available; the complete economical utilization of waste heat by means of turbo-generators for electric power generation, except where this heat can be used to better advantage for "process" or has a market value greater than its coal equivalent; and lastly toward the interchange of electric power between plants generating power from waste heat and public service companies.

Bureau of Metallurgy Is Established

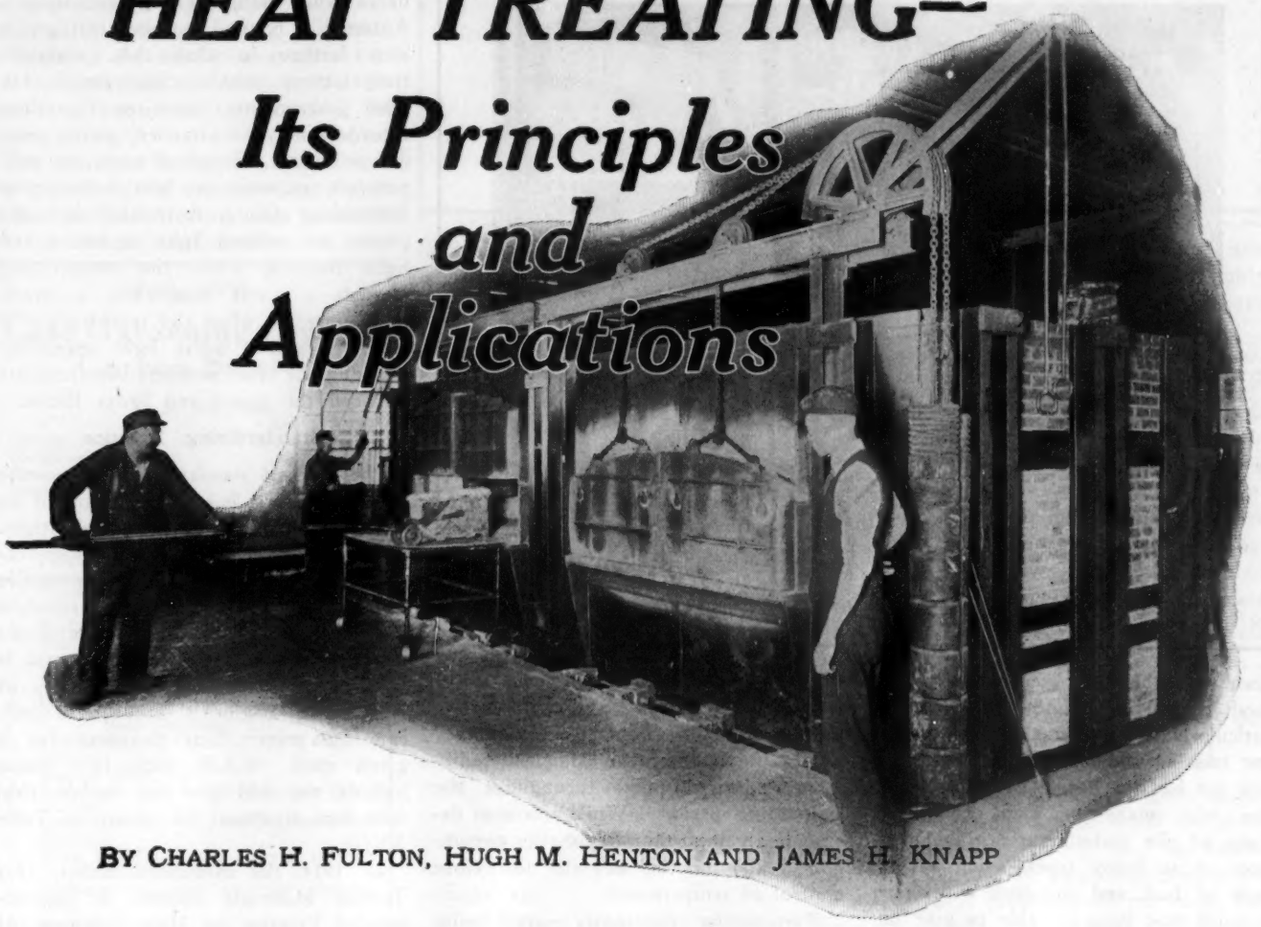
As a further step in the plan to expand its scientific research facilities, announcement is made by the Carnegie Institute of Technology, Pittsburgh, of the establishment of a special research bureau of metallurgy to begin its work Sept. 1. The express object of the new department, it is reported, is to apply to metallurgical questions the recent discoveries in the field of physics and chemistry.

The organizing of this new bureau is the second important development concerning metallurgical research that has been reported during the year at the Pittsburgh institution. The first step it was previously announced, was the adoption of a definite program of investigations in metallurgy to be made by the department of metallurgy at the institute in co-operation with the United States bureau of mines. Several college graduates already have been appointed to fellowships by the institute authorities to carry out the program of research problems, the investigators to have the financial aid and assistance of an advisory board of metallurgical engineers and steel manufacturers of Pittsburgh in addition to the co-operation of the bureau of mines.

Attention is called to the fact, however, that the new research bureau of metallurgy just organized will be a department established separately from the research investigations carried out by the department of metallurgical and mining engineering in co-operation with the bureau of mines. Dr. Francis M. Walters, Jr., has been appointed director of the new bureau and Dr. Vsevolod N. Krivobok, has been appointed as an assistant. The appointment of another assistant, a specialist in X-Ray work, will be made during the summer months.

As director of the bureau, Dr. Walters also will have the title of professor of experimental physics. For the past two years he has been connected with the United States bureau of standards, Washington, as associate physicist, and he has had a wide and varied experience in the teaching field as well as in the field of applied physics. He received his Bachelor's Master's, and Doctor's degrees from the University of Missouri.

HEAT TREATING—
Its Principles and Applications



BY CHARLES H. FULTON, HUGH M. HENTON AND JAMES H. KNAPP

Chapter VII—Carburizing and Case Hardening—(Concluded)

WHILE continuous-type furnaces similar to those described in the last installment are used extensively for quantity production work, the great mass of material requiring carburization and case hardening is handled in solid hearth furnaces. Sometimes production can be increased in furnaces of this type by using a pusher or charging device to handle the boxes. When the furnaces are oil or gas fired, the burners use air preheated by waste heat from the top of the furnace. Usually two burners are provided on each unit, the heat passing up on each side of the heating chamber, striking the roof and being deflected down on the work. A battery of furnaces of this type is shown in Fig. 68.

The construction of a typical furnace suitable for carburizing is comparatively simple. The inner refractory brick are backed by insulating, nonconducting brick to resist the conduction of heat to the cast shell of the furnace. In some cases, a space is left between the brick and the shell for diatomaceous earth, which serves as a heat insulator. The arrangement of hearth, burners, etc., is similar to that of furnaces described in earlier chapters.

For heavy work the car-type furnace is employed because its design facilitates the handling of bulky material. Units of this kind are built singly or in banks of several arranged side by side. A double car-type furnace is shown in Fig. 69. These furnaces, which are built with single or double end, usually are over-fired, the burners being arranged above the level of the car hearth. Provision for sand sealing is made by placing a long shallow pocket on either side of the car, as shown in Fig. 70.

In selecting furnaces for carburizing and case hardening, many factors must be carefully considered. Conditions in the plant have an important influence. The floor space, free height and power available, type of labor to be had, frequency of shutdown, and available sources of power must be studied. The cost of the initial installation and probable maintenance and depreciation must be balanced with the expected results.

These factors having determined in a general way what kind of an instaallation is desirable, the next step is to work out a more definite idea of requirements from a study of the nature of the work to be done, the rate of production, size and shape of work, uniformity of product, quality or accuracy of the operation and cost of operation allowable.

If these factors are properly weighed, the consideration of various types of furnaces gradually will be narrowed

Discuss Alloy Steels In Next Chapter

HEAT treating alloy steels is explained in Chapter VIII which will begin in the issue of August 7. Chapter I of the series appeared Oct. 4; Chapter II was published in the issues of Oct. 18, Nov. 1 and Nov. 15; Chapter III in the issues of Nov. 29, Dec. 13 and Dec. 27; and Chapter IV in the issue of Jan. 10. Chapter V appeared in the Jan. 24, Feb. 7, Feb. 21, March 6 and March 20 issues. Chapter VI appeared April 3, April 17, May 1 and May 15. Chapter VII appeared May 29, June 12, June 26 and July 10.

Charles H. Fulton is director of school of mines and metallurgy, University of Missouri; Hugh M. Henton is consulting metallurgical engineer and assistant professor of metallurgy and mining, State College of Washington, and James H. Knapp is industrial engineer, Los Angeles.

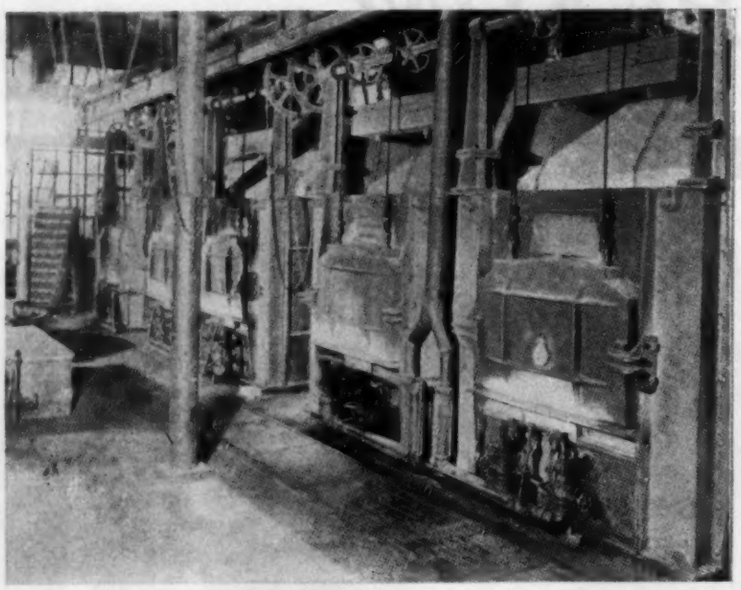


FIG. 68—A BANK OF FIVE SIDE-FIRED CARBURIZING FURNACES

down to a choice of comparatively few. Good engineering advice is invaluable, particularly to the small operators of heat treating shops or departments who have not had the benefit of wide experience with many types of equipment. Many of the manufacturers build furnaces of so many types, using various kinds of fuel, and for such a diversity of work that they are able to give unprejudiced advice on the performance of furnaces for any specific work.

Pyrometers Are Essential

Too much emphasis cannot be placed upon the importance of a uniform carburizing temperature even though the greatest care is exercised in packing the work and a good compound is used, the results will not be satisfactory unless the temperature is held steadily at the desired point throughout the carburizing period. While furnace design is an important factor, the pyrometer really is the key to the close control of temperature.

Pyrometers constantly are being used more widely in heat treating because they enable the operator to know instead of guess at the temperature. For ordinary work an indicating pyrometer serves the purposes while in more extensive installations recording instruments permit a check of the temperatures in all of the furnaces and baths of the department. Automatic control pyrometers go a step farther in that they maintain temperatures within close limits. On most instruments alarm or signalling recorders may be attached, giving audible or visible indications when the temperature exceeds or falls below predetermined points. A number of companies use colored light signals, a red light flashing when the temperature exceeds a fixed maximum, a green light showing when the temperature is too low, and a white light appearing as long as the temperature remains between the upper and lower limits.

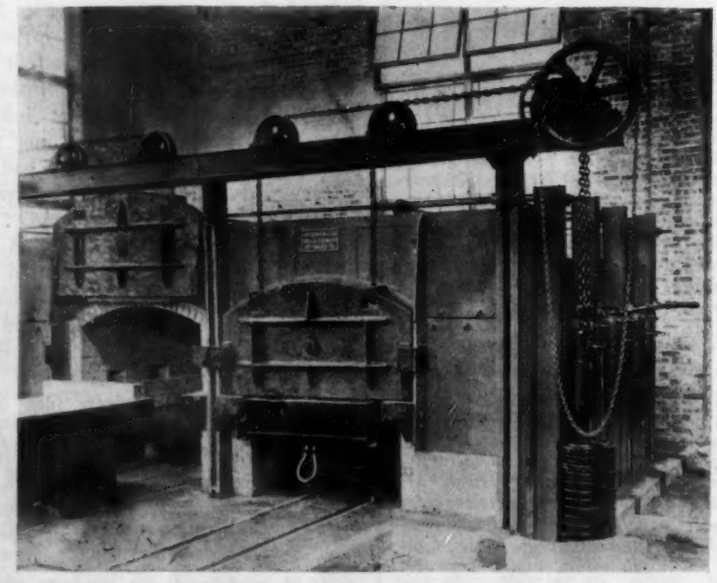


FIG. 69—TYPICAL DOUBLE CAR-TYPE FURNACE FOR CASE HARDENING

Standardizing Practice

The need of standard practice in case hardening work has been recognized by several American technical organizations. For the purpose of simplifying specifications for steel the Society of Automotive Engineers has designated five standard case hardening heat treatments, as shown in Table XVII. The Roman numeral is used in connection with the Society of Automotive Engineers' number to indicate the proper heat treatment for a given steel. "S.A.E. 1020—IV" would indicate the 0.20 per cent carbon steel with heat treatment IV shown in Table XVIII.

In 1914 the American Society for Testing Materials adopted a "Recommended Practice for Heat Treatment of Case Hardened Carbon Steel Objects." This recommended practice is scheduled for early revision, suggestions for which are now in committee. Five treatments are recommended, corresponding closely to those suggested by the Society of Automotive Engineers.

The first provides for quenching carburized objects by emptying the contents from the boxes in cold water or in oil. Of course this leaves the core and the case coarsely crystallin.

In the second treatment, in order to reduce the hardening stresses and to decrease the danger of distortion, the work may be removed from the boxes and allowed to cool before quenching to a temperature slightly exceeding the critical range of the case. Both the core and case remain coarsely crystallin.

The third treatment refines the case and increases its toughness by allowing carburized objects to cool slowly in the carburizing box within or outside the furnace, reheating to slightly above the lower critical point and quenching in water or oil. This treatment refines the case but not the core. To refine both, the fourth treatment provided for cooling slowly from the carburizing temperature to 650 degrees Cent. or below, reheating to a temperature above the critical point of the core, quenching in water or oil, reheating to slightly above

the lower critical point of the case, and quenching in water or oil.

The fifth treatment offers a method of reducing the hardening stresses created by quenching by reheating the objects to a temperature not exceeding 200 degrees Cent.

The American Society for Steel Treating also is active in promoting better methods of heat treating. Its members are enrolled in local chapters in practically every important metalworking center in the country and largely because of the interest inspired by this form or organization, the society is more active and in closer touch with heat treating problems than any other.

Table XVII

Case Hardening Typical Carbon Steel*

S. A. E. NO. 1020

	Min.	Max.
Carbon	0.15	0.25
Manganese	.30	.60
Phosphorus	....	.045
Sulphur	....	.05

Heat Treatment I

1. Carburize at 1650 to 1700 degrees Fahr.
2. Quench
3. Draw at 250 to 500 degrees Fahr.

Heat Treatment II

1. Carburized at 1650 to 1700 degrees Fahr.
2. Quench from box
3. Reheat to 1400 to 1450 degrees Fahr.
4. Quench
5. Draw at 250 to 500 degrees Fahr.

Heat Treatment III

1. Carburized at 1650 to 1700 degrees Fahr.
2. Quench from box
3. Reheat to 1650 to 1700 degrees Fahr.
4. Quench
5. Reheat to 1400 to 1450 degrees Fahr.
6. Quench
7. Draw at 250 to 500 degrees Fahr.

Heat Treatment IV

1. Carburize at 1650 to 1700 degrees Fahr.
2. Cool in box
3. Reheat to 1400 to 1450 degrees Fahr.
4. Quench.
5. Draw 250 to 500 degrees Fahr.

Heat Treatment V

1. Carburize at 1650 to 1700 degrees Fahr.
2. Cool in box
3. Reheat to 1650 to 1700 degrees Fahr.
4. Quench
5. Reheat to 1400 to 1450 degrees Fahr.
6. Quench
7. Draw at 250 to 500 degrees Fahr.

*Abstracted from steel specifications and data sheets of Society of Automotive Engineers.

Summary of Chapter VII

The chief points in relation to carburizing and case hardening may be summed up as follows:

1. Low carbon steels, mechanically well worked, are most suitable for cementation.
2. The carbonaceous gases from the cement are the chief agents in carburization.
3. A fine grained as well as a hard microstructure is necessary.
4. As many as three separate heatings and quenchings may be necessary to properly refine the case and core.
5. A decided distinction between carbon and alloy steel is noticed in regard to speed, depth and critical range for carburization.
6. The selection of furnaces for case hardening is dictated by plant conditions, nature of work to be done, cost and many other factors.
7. Uniform temperature is an essential in case hardening which is most easily obtained through the use of pyrometers in conjunction with properly designed furnaces.

Table XVIII

S. A. E. Case Hardening Methods

Operation number	I	II	III	IV	V
1	Carburize	Carburize	Carburize	Carburize	Carburize
2	Quench	Quench	Quench	Cool in box	Cool in box
3	Draw	Reheat	Reheat	Reheat	Reheat
4		Quench	Quench	Quench	Quench
5		Draw	Reheat	Draw	Reheat
6			Quench		Quench
7			Draw		Draw

Outlines Foundry Practice in Germany

Among the lectures delivered at the International Foundry Trades Exhibition at Bingley Hall, Birmingham, England, recently was one on "Modern Foundry Practice in Germany," by Dr. Siegfried Werner, Dusseldorf, Germany, president of the Verein Deutscher Eisengiessereien. Dr. Werner described the warm blast cupola and also dealt with the production of pearlitic cast iron covering in a large measure the ground which he traversed in his lectures in the United States a few months ago.

Dr. Werner also referred to some recent experiments in which an effort has been made to produce high silicon castings by taking advantage of the exothermic reaction at 1100 degrees Cent. between ferrosilicon and steel. In the experiments, steel punchings were scattered over the hearth of a reverberatory furnace along with walnut size lumps of ferrosilicon. At 1100 degrees Cent. Dr. Werner said the exothermic reaction took place and produced almost immediately a highly fluid bath which it was possible to pour into castings.

Dr. Werner also described the German method of reducing sulphur in cast iron by the addition of potash. It is necessary, he said, to have the cupola fitted with a receiver and to place a siphon slag skimmer between the receiver and the cupola so that the bath to be treated will be free from slag. He claimed that this treatment, in addition to reducing sulphur increased the machineability of the casting by 30 per cent.

Compiles Useful Data on Structural Material

Values of the strength of pure metals and their alloys, and of wood are given in the revised edition of the United States bureau of standards circular on the physical properties of materials. The data include the strength in tension, compression, and in shear, the resistance to fatigue, and many other properties which an engineer must know in order to design a structure that will safely carry its intended load. The effect of high temperatures on the strengths of different metals is shown by tables and by graphs, and the physical properties such as specific gravity, melting point, and coefficient of expansion are given.

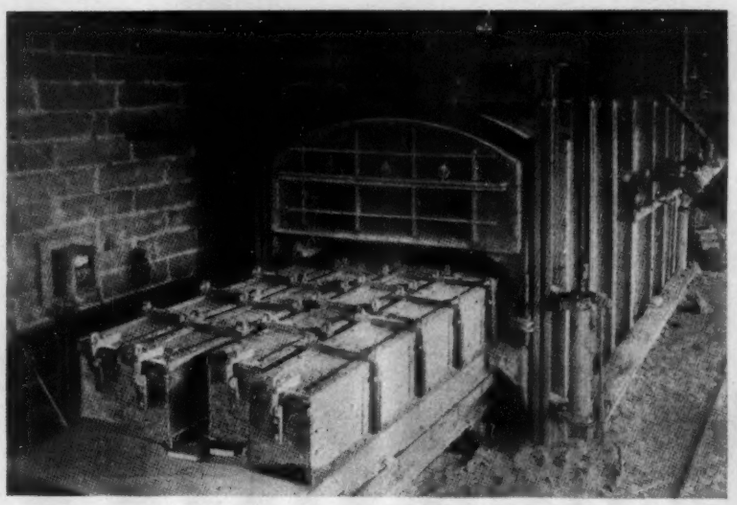


FIG. 71—CAR OF CARBURIZING POTS READY FOR CHARGING

Melts in Twin Electric Furnaces

Two Acid-Lined Units, Mounted on Turntable 180 Degrees Apart and Having Single Set of Electrodes, Provide Small Batches of Hot Metal at Short, Even Intervals

BY A. W. BRYANT

TO PROVIDE small hot batches of metal for light castings at regular intervals of about three-quarters of an hour each, a multiple electric furnace installation recently has been made at the plant of the Kelly & Jones Co., Greensburg, Pa. The furnaces were designed by Wm. Swindell & Bros., Pittsburgh, with the idea of eliminating the unproductive period between heats by melting smaller amounts of metal in a shorter period of time. The Kelly & Jones company manufacture a line of plumbing and valve fittings in gray iron, steel and malleable iron.

Previous to the installation of the electric furnaces, a side blow converter of 1-ton capacity was used to supply the molten steel. The work turned out by the plant is composed almost entirely of thin walled tee or elbow castings ranging from small diameters to sizes as large as 12 inches in diameter. The metal, which runs entirely around the core, must be hot to pour the casting successfully and must be sufficiently ductile to withstand the contraction strains while cooling. However, the shop is large and employs a large number of molders, making it essential that the metal come fast enough to keep the molders busy.

The melting unit consists of two acid lined furnaces of 1½ tons capacity each. The furnaces are mounted on a turntable 180 degrees apart. However, only one power station and one set of electrodes are supplied for the two furnaces. A view of the melting installation is shown in Figs. 1 and 2 and a view of the steel foundry bay and the melting unit is shown in Fig. 3.

The furnaces are operated in the following manner. Both furnaces are charged and the turntable swung into the melting position and locked by throwing a lever. The electrodes are lowered into one of the furnaces and the power turned on. The first heat on a cold furnace is melted down ready to pour in one hour. At that time the electrodes are hoisted clear of the furnace roof at a speed ratio which is three times as fast as the speed used for the melting operation. The turntable then is swung around by a hand lever until the hot furnace is directly over the pouring pit, shown in Fig. 1, and the cold furnace is in line with the stationary electrodes at the power station. The electrodes are lowered at a high speed rate until they come in contact with the charge. The speed ratio then is reduced to that of the regular melting practice.

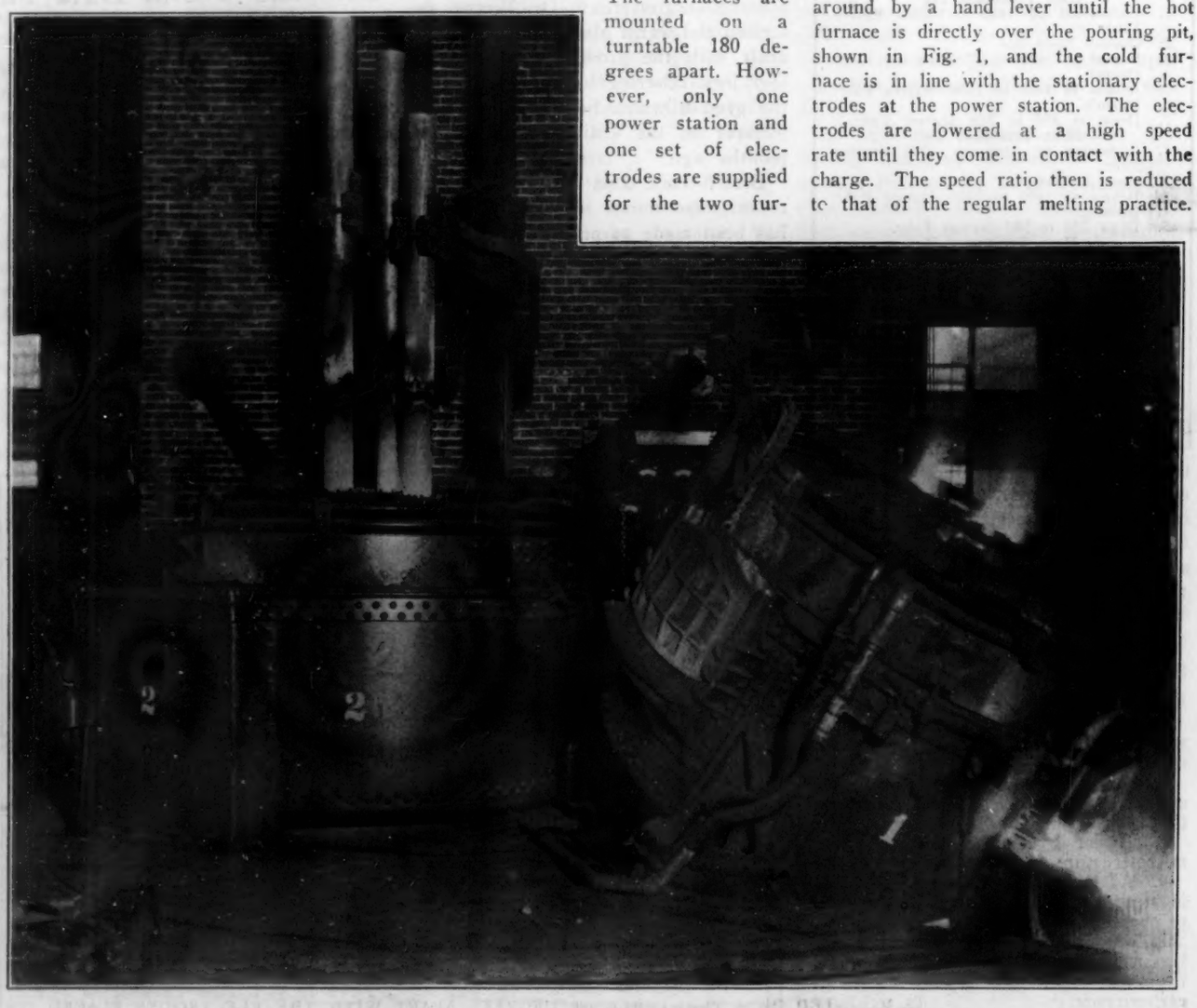


FIG. 1—THE CHARGE IN ONE FURNACE IS BEING MELTED WHILE THE OTHER UNIT IS BEING POURED

The furnace containing the molten metal is tapped out and the bottom and banks repaired. It then is charged by hand and made ready, so that when the heat in the opposite furnace is ready to be tapped, the other furnace may be put in the melting position and the furnace containing the molten metal is put into the pouring position. After the first few heats the furnaces become heated thoroughly and hot batches are turned out in 45 minutes.

Thus one furnace always is melting while the opposite one is being made ready, so that when one is ready to pour the other is ready to go under the power. Only three minutes elapse from the time the power is taken off one furnace until it is on again in the other furnace.

In this manner small hot batches are provided at regular intervals of about three-quarters of an hour each. The metal is hot enough to pour the lightest of castings and the amount is small enough so that all pouring is completed before the metal has had much opportunity to cool. If desired, the metal may be hand shanked directly from the furnace in the pouring position without holding up the melting operation being carried on in the opposite furnace.

The turntable is an extremely simple affair. A heavy I-beam is bent into a circular shape and is supported by six roller bearings which are grouted into the foundation. The ends of two heavy parallel beams are fastened securely on the inside of this circular beam. On these two parallel beams the "A" frames of the two furnaces are set. The beams all are tied into a central pivot operating in a ball bearing. The whole frame is covered with steel plate. There are no beams or supports directly under the furnaces and the tilting gears and motors are assembled on the steel plate, so that no damage could be done by a run out through the bottom of the furnace. The weight of the whole mechanism is distributed so evenly between the roller bearings and the central ball bearing pivot that one operator has no trouble in shifting the table from one position to the other.

The construction offers many mechanical advantages. The electrode supports are not fastened to the furnace shell, but are supported by independent vertical beams mounted on the concrete floor and are tied securely at the top to the transformer vault. It has been the author's experience that these supports attached to the furnace shell tend to distort the same, making it hard to fit

Weight and Analyses of Steel Heats

Weight per heat, pounds	Chemical analysis Carbon per cent	Manganese per cent	Silicon per cent
3072	0.20	0.50	0.41
3077	0.22	0.51	0.40
3064	0.20	0.50	0.39
3070	0.18	0.48	0.39
3079	0.22	0.40	0.39
3074	0 20	0.47	0.34
3069	0.22	0.49	0.47
3067	0.23	0.51	0.33
3069	0.22	0.55	0.37
3071	0.24	0.51	0.40
3067	0.24	0.55	0.40
Average 3069	0.215	0.51	0.38

PLANT SPECIFICATIONS ON ABOVE STEEL

Carbon	Manganese	Silicon
0.18 to 0.24	0.45 to 0.60	0.30 to 0.40

PHYSICAL SPECIFICATIONS

Ultimate strength	Elastic limit	Elongation	Reduction of area
65,000 to 70,000	30,000 to 35,000	30 to 40 per cent	45 to 55 per cent

120 degree bend test over 2-inch rod.
2000-3000 pounds per square inch porosity test.

FIG. 2—THE TWO UNITS ARE MOUNTED ON A TURNTABLE 180 DEGREES APART WITH THE ELECTRODES PLACED ON ONE SIDE AND THE POURING PIT DIRECTLY OPPOSITE

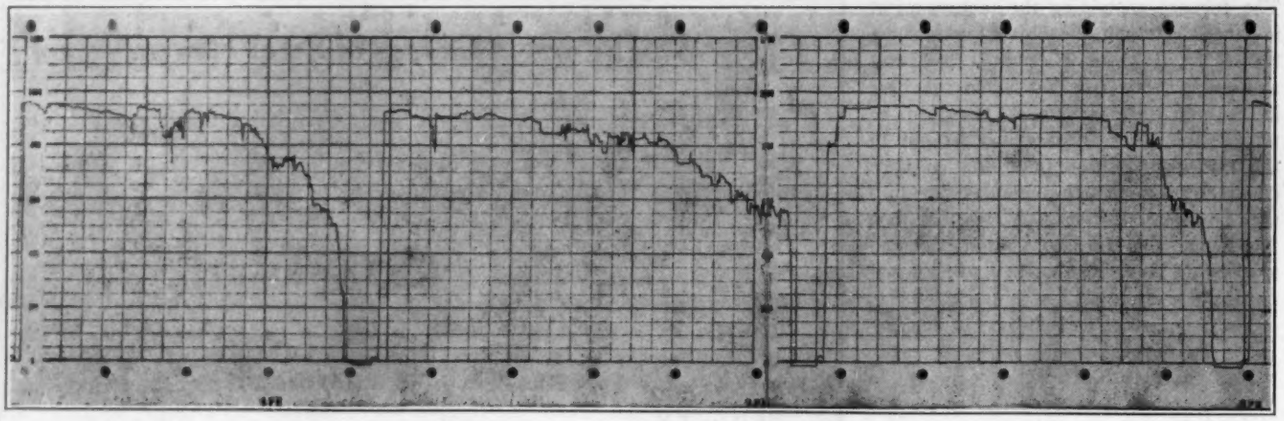


FIG. 3—THE POWER CURVE TAKEN FROM THE WATTMETER IS RELATIVELY SMOOTH

the spare roof on the furnace and to match the roof with the electrodes without considerable adjusting on both the roof and the electrode clamps. The furnaces have been in operation for a year and the electrodes still match up with the spare roofs, the roof alone being adjusted. Neither are the electrode winches or motors set on the shell, but a special cabinet is provided in the wall of the transformer vault. The electrodes are not tilted with the furnaces and are not subject to breakage from this source.

Electrode oxidation has almost been eliminated due to their being in operation continuously, except for the small interval of time required to change the position of the furnace bodies, which requires approximately three minutes.

The furnaces never have been run to capacity on a 24-hour basis so their actual productiveness on this score cannot be determined. It is the practice to run five or six heats of steel followed by two or three heats of gray iron, made by melting borings from the company's machine shop. The best day's run consists of eleven consecutive 1½-ton heats in a nine-hour shift. The charges and analyses are shown in the accompanying table.

A better load factor is obtained by cutting down this unproductive period between heats. A power curve taken from the wattmeter is illustrated in Fig. 4, and shows a much smoother curve than one which is broken for half an hour between each heat as results from single furnace operation. This time is used in producing more steel. The shop at all times has a constant supply of metal which is not cut off when one furnace goes down for repairs as the other furnace may be operated as a single unit.

The charging door is at an angle of 120 degrees to the tapping spout. This arrangement allows the operator access to any electrode during the melting.

The steel made is a good quality acid steel in which no attempt is made for refinement of phosphorus or sulphur. Should the elimination of these elements be desired, extra voltage taps are provided at the top of the transformer so that the voltage on the furnace may be changed to suit the basic operation.

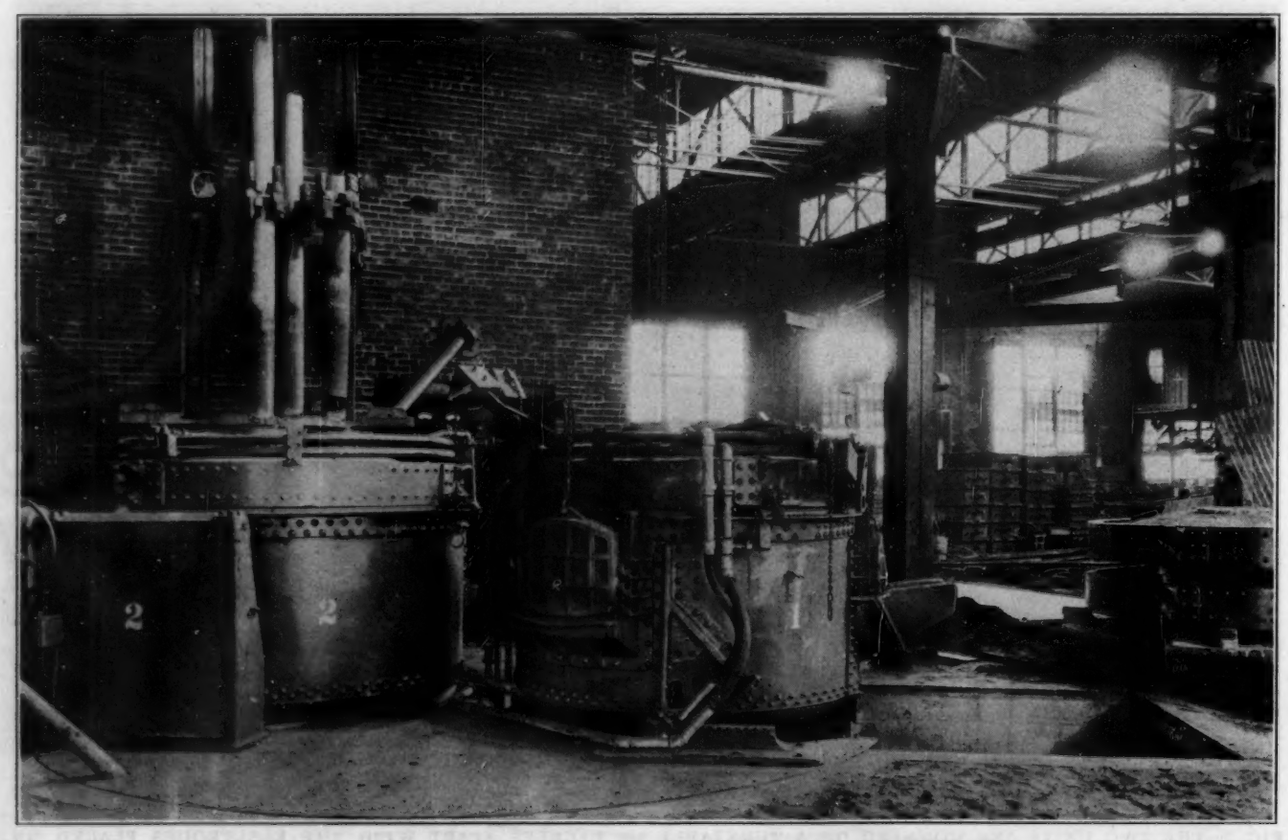


FIG. 4—GENERAL VIEW OF ONE BAY OF THE FOUNDRY WITH THE ELECTRIC FURNACES AT THE LEFT

Tests Steel Plates of Leviathan

Chemical and Physical Investigation of German Made Plates Fail To Show Clearly Why They Have Resisted Corrosion So Well— Copper Present and Banded Structure May Explain Resistance

BY DR. G. B. WATERHOUSE

WHILE the story of the LEVIATHAN is familiar to almost everyone a little of her history may be repeated. She was completed in 1914 at the yards of Blohm & Voss in Hamburg under the name of VATERLAND. At the beginning of the World war she was at her pier in Hoboken, N. J., and remained until some time after, being taken over by the United States navy in April, 1917. Her first trip as a transport began Dec. 15, 1917, and she was drydocked at Liverpool early in 1918. Her last trip as a transport ended Sept. 9, 1919, when she was again laid up at Hoboken. After considerable delay in regard to policy the contract for her reconditioning was awarded to the Newport News Shipbuilding & Drydock Co., Feb. 15, 1922. In April, 1922, she arrived at Newport News under her own power and left May 16, 1923, bound for Boston where she was drydocked May 18 in the only dry dock in the United States large enough to accommodate her. On July 4, 1923, she left on her maiden trip under the United States flag as a merchant ship. A complete and well illustrated account of the ship and her reconditioning appeared in a special issue of *Marine Review* July, 1923.

It will be noticed that over five years elapsed between drydocking at Liverpool and at South Boston, during which time no attention or care could be given to the hull plates. Nevertheless it was found that the bottom was in remarkably clean condition, the hull being free from marine growths, pitting and corrosion. While the ship was at Liverpool five years before, a skeg of English steel plates was riveted to the stern for carrying a part of the rigging for the paravane or other gear, a mine sweeping device invented, supplied and installed by the British government. In contradistinction to the plates of the hull this skeg or paravane gear was found to have been badly attacked by the continuous submersion in sea water, without attention for over five years. These facts regarding the steel plate were brought to the author's attention by A. H. Jansson, associate editor of *Marine Review*, and by Prof. James R. Jack, head of the department of naval architecture at the Massachusetts Institute of Technology. It was felt that an investigation of the steel plate, particularly of the German steel, would be of interest, and through the courtesy of the commandant and officers of the United States navy yard, Boston, samples were secured for examination.

Why This Resistance to Corrosion?

WHEN the S. S. LEVIATHAN *was drydocked at Boston, it was found that the original German plates had resisted the corrosion of sea water much better than a number of plates of English manufacture which had been installed at Liverpool in* 1919. *A. H. Jansson, associate editor of Marine Review, reported the facts to Dr. G. B. Waterhouse, professor of metallurgy, Massachusetts Institute of Technology, who tested samples of both steels. The results, which are described by Dr. Waterhouse in the accompanying article, do not clearly indicate why the German steel resisted corrosion more successfully during* 10 *years of service than the other steel in* 5 *years.*

Dr. Waterhouse's conclusions suggest interesting questions. Is the presence of more copper in the original steel responsible for its greater resistance; does the banded structure account for it; or does some other factor, not revealed by the tests, hold the key to the problem?

Two samples of the German steel were obtained. They were oval in shape, about 18 x 20 inches. One was about 1 3/16 inches thick and the other about 1 5/16 inches. They may be called samples *A* and *B*. The physical testing was done by men accustomed to making and handling steel plate and thanks are due to A. L. Meyer, metallurgical engineer, Alan Wood Iron & Steel Co., and to William G. Humpton, engineer of tests, Lukens Steel Co. for their co-operation.

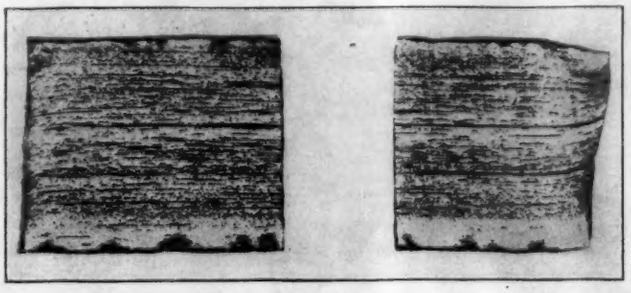
The chemical analyses were as follows:

	Sample A	Sample B
Carbon	0.16	0.15
Manganese	.65	.57
Phosphorus	.42	.034
Sulphur	.069	.057
Silicon	.006	trace
Copper	.169	.134
Nickel	nil	nil
Chromium	.013	no
Vanadium	nil	nil

The samples did not show any aluminum, titanium, molybdenum or zirconium. The analyses indicate ordinary steel, rather high in sulphur, except for a high percentage of copper either introduced purposely or present in the steelmaking charge.

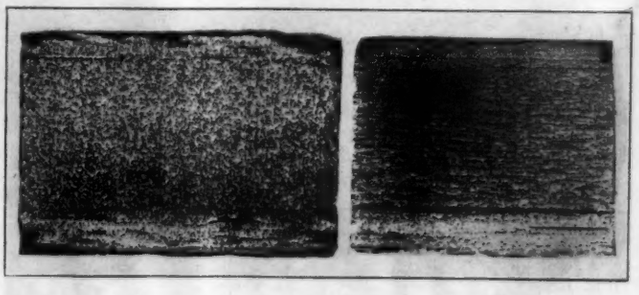
The results of the physical tests are as follows::

	Sample A Long.	Sample A Trans.	Sample B Long.
Yield point, pounds per, square inch	37,950	37,100	31,300
Ultimate stress, pounds per square inch	63,200	63,300	51,630
Elongation, per cent in 8 inches	27	25	28



Transverse Longitudinal

FIG. 1—SAMPLE *A*



Transverse Longitudinal

FIG. 2—SAMPLE *B*

FIG. 3—SAMPLE *A*, TRANSVERSE. X 10

FIG. 4—SAMPLE *B*, TRANSVERSE. X 10

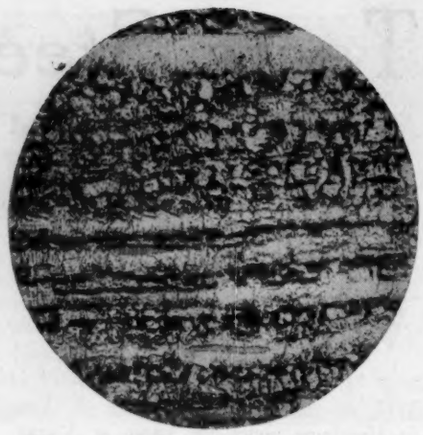


FIG. 5—SAMPLE *A*, TRANSVERSE. X 100

Reduction, per cent	49.2	51.9	56
Bend .....180° flat		180° flat	

In addition tests were made on the *B* steel, both in the longitudinal and transverse directions after turning down to 0.505 inches diameter and 2 inches long. These results were as follows and show clearly that the *B* sample is higher in carbon toward the center.

Tensile Tests (Small)

	Sample B	
	Long.	Trans.
Ultimate stress, pounds per square inch	60,000	58,500
Elongation, per cent in 2 inches	34	36
Reduction, per cent	57.5	50
Bend .....180° flat		180° flat

The tensile test results show good material with higher ultimate stress than would be expected in this thick plate from the carbon content. The fractures were gray granular with silky edges.

Samples were machined from the test pieces for microscopic investigation. The microscopic results are shown in Figs. 1 and 2.

These indicate a banded structure, particularly in the case of *A*. This is brought out more clearly in the samples magnified 10 diameters, after etching with dilute nitric acid in alcohol, as reproduced in Figs. 3 and 4. It also is noticeable in the microphotographs magnified 100 diameters. The higher magnification also shows a rather coarse structure, as well as many nonmetallic impurities or sonims. Figs. 5 and 7 particularly show these sulphate inclusions. The interesting features of the microstructure are the open structure showing finishing at a high temperature, the presence of numerous nonmetallic inclusions, and the well marked banded structure.

Tests of English Steel

The English steel was about ¾ inch thick. The chemical analysis is as follows: Carbon, 0.14; manganese, 0.37; phosphorus, 0.057; sulphur, 0.053; silicon, 0.011; copper, 0.099; nickel, trace; and chromium, nil. The physical results on the full size and small test pieces are as follows:

	Full size	Small size
Yield point	37,260	36,500
Ultimate stress	56,740	61,750
Elongation, per cent	22.5	32
Reduction, per cent	52.5	57.5

In all cases the fracture showed gray granular with silky edges. The longitudinal specimens were bent flat on themselves. The transverse specimens were bent 180 degrees round a pin equal in diameter to the thickness of the specimen. With further reductions cracks developed on the outside. The microstructure was normal, agreeing with the analysis. Judging from the high phosphorus the steel would appear to be acid open hearth, and notwithstanding the rather high sulphur the structure shows a comparatively clean, good steel.

A careful investigation of two samples of German plate from the hull of the LEVIATHAN does not give clear evidence as to why this steel resisted corrosion in sea water so well. Possible reasons, however, are the presence of a comparatively high percentage of copper, and a marked banded structure whereby after moderate corrosion low carbon layers would be exposed to the sea water. It is noticeable that this steel is rather open and coarse in structure and has good physical properties. It is not a "clean" steel, in the language of the steelmaker, but contains numerous nonmetallic inclusions. The English steel, which suffered badly from corrosion, appears to be ordinary acid open hearth with no marked characteristics to distinguish it from ordinary plate except that copper is present in moderate amount.

Phonograph needles are made of high-grade carbon steel capable of taking a fine temper. Any good phonograph needle will scratch hard plate glass. Hardness is an essential quality. A more important quality of a good needle is a smooth, rounded point and it is this requirement in design which is the chief distinction between the phonograph needle and the familiar household sewing needle. According to one authority 10,000,000 phonograph needles are produced in a day.

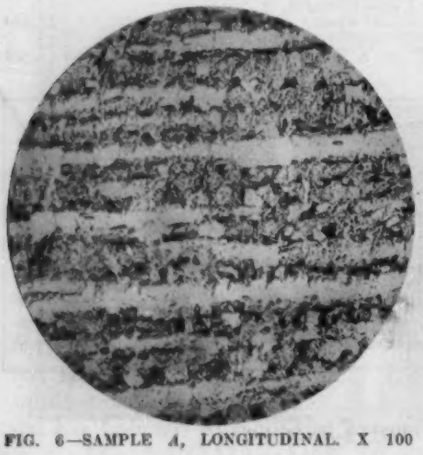


FIG. 6—SAMPLE *A*, LONGITUDINAL. X 100

FIG. 7—SAMPLE *B*, TRANSVERSE. X 100

FIG. 8—SAMPLE *B*, LONGITUDINAL. X 100

Power Key to World's Need

Engineers Believe Fuller Development Will Promote Peace and Prosperity—Eminent Engineers Close Notable Gathering in London—Achievements of Lord Kelvin Celebrated on Occasion of Centenary of His Birth

LONDON, July 12.—The World Power conference which opened in London, June 30, was brought to a close Friday evening, July 11, with a banquet at the Connaught Rooms, London, in commemoration of the one hundredth anniversary of the birth of Lord Kelvin. Lord Balfour, who represented Great Britain at the Washington naval disarmament conference, occupied the chair. Over 400 prominent engineers from all parts of the world attended. Thirty-nine countries were represented at the conference. The American delegation was the largest outside of Great Britain. It was headed by O. C. Merrill, executive secretary of the federal power commission, Washington.

During the conference over 45 separate meetings were held, at which generation and application of power was discussed in all its phases. One of the most interesting sessions from the iron and steel and mechanical engineering standpoint was held Wednesday afternoon, July 9, to discuss the application of power to problems of electrometallurgy. Ten papers were presented. The proceedings were opened by T. W. S. Hutchins, who read a paper on "Electrolytic Iron," pointing out that electrolytic iron cannot expect to complete under present conditions with other methods of manufacturing relatively low grade tonnage products on account of cost, but the author believes there is a big field for this metal in the manufacture of high grade sheets, pipe, and for electrical instruments. In Great Britain, Mr. Hutchins said, with electricity at 1d (1.8c) per kilowatt-hour, the power cost is about £5 ($21.05) per ton of electrolytic iron produced. If we add to this £2 5d ($9.80) for labor, 15s ($3.25) for sundries, and £4 10s ($19.50) for raw material in the shape of ore or scrap, the total prime cost per ton is about £12 10s or say $54.30 per gross ton, equivalent to 2.42c per pound.

Iron Has Peculiar Qualities

Mr. Hutchins pointed out that electrolytic iron has peculiar expansion properties. Expansion ceases at about 400 degrees Cent., contraction starts soon thereafter, and continues up to 600 degrees, after which expansion starts again.

At the conclusion of the paper specimens of electrolytically produced seamless tubes up to 6 inches in diameter made by the interests associated with the Compagnie des Produits Chimiques et Electrometallurgiques at Lyon were inspected.

In a communication from C. Matschof, technical head of the Verein Deutscher Ingenieure, Berlin, it was stated that German experiments indicate that a current density of 46.5 amperes per square foot is satisfactory for making electrolytic iron.

In response to a question the author said he prefers the vertical to the horizontal cathode because it is easier to handle the product with the former inasmuch as the horizontal cathode must be supported by two bearings.

Electric Steel Leads

In an interesting paper by E. P. Mathewson, prominent in the development of the American zinc and copper industries, entitled "Power in Electrometallurgy in the United States," it is stated that the electrical refining of steel, chiefly in steel foundries, now consumes more power than is utilized for the manufacture of aluminum, the former requiring 450,000 electrical horsepower and the latter 350,000 horsepower. Electrolytic methods, Mr. Mathewson said, predominate in the refining of gold and silver.

Discussing Mr. Hutchins' paper, Mr. Mathewson said that the electrolytic iron industry in America is passing through the same stages as the zinc industry. He pointed out that when the electrolytic production of zinc was first introduced in the West it was not believed it would amount to much, but today it is a big factor in the industry. The power cost, he said, is one of the least important factors, being only about 10 per cent of the total cost of refining the metal. Electrolytic iron, said Mr. Mathewson, has a great future because of its purity, and he predicted that it will be especially useful as a foundation for alloys and also for the manufacture of oxygen and gas cylinders. He said that the leading American and French interests mentioned above are now about to start the construction of a large electrolytic iron plant at Niagara Falls. At present the Western Electric Co. is manufacturing about 4000 pounds of electrolytic iron per day for electrical instruments at its Hawthorne plant at Chicago.

The Cottrell process for the electrolytic precipitation of dust was described at this session and it was stated that the profits turned over to the Smithsonian institution for the promotion of research now exceed $500,000. A paper also was presented on electrometallurgy in Italy by Dr. F. Giolitti.

At other sectional meetings of the conference held July 9 to 11, various problems of electrical engineering were discussed, including the possibility of obtaining power direct from the sun. The latter problem was outlined by Prof. Elihu Thomson, the American recipient of the Kelvin medal for 1924. Problems relating to the electrification of railways and the application of electric power to farming also were discussed.

At the final meetings on Friday, July 11, resolutions were unanimously passed looking toward the establishment of a permanent organization under the auspices of which another conference will be held three or four years hence, perhaps in Canada. For this purpose a national committee will be formed to represent the power industries of each country. Each of these committees will elect a delegate to an international executive committee. D. N. Dunlop, director of the British Electrical Manufacturers association, Kingsway, London, will continue to act as chairman of the international committee. O. C. Merrell, federal power commission, Washington, will continue to represent the United States.

Resolutions expressing appreciation of visiting delegates of the courtesies they have received in Great Britain also were passed, with the following general resolution: "That this conference is of the opinion that the world's most crying need today is greater production and manufacturing activity among its peoples under conditions which will promote individual prosperity and happiness, and that this can be largely achieved by the fuller development of national power resources and by the establishment of the most economical means for the general distribution and utilization of energy."

Honor Paid Lord Kelvin

At the centenary dinner, July 11, various eloquent speakers paid glowing tributes to the great scientific attainments of Lord Kelvin who was born 100 years ago. Over 400 were present and the dinner was one of the most distinguished gatherings of technical and sci-

entific leaders held this year. Lord Balfour was chairman and addresses were made by him and by Sir Richard T. Glazebrook, Dr. Elihu Thomson, General Electric Co., Schenectady, N. Y.; Prog. Luigi Lombardi, director of the Italian Royal Scientific academy, and Dr. A. E. Kennelly, professor of electrical engineering, Harvard university, Boston.

Plan Third Power Show

Over 260 exhibitors have been assigned space at the third national exposition of power and mechanical engineering which will be held in the Grand Central palace, New York, Dec. 1-6. This number is more than two times greater than that of those who had engaged space on Aug. 1 a year ago. The exposition will parallel the meetings of the American Society of Mechanical Engineers and the American Society of Refrigerating Engineers. The A. S. M. E. meeting will be held in the Engineering Societies building, 29 West Thirty-ninth street, and the A. S. R. E. meeting will be held at the Hotel Astor. Plans are under way for the American Society of Heating and Ventilating Engineers to have a gathering of local sections during the time of the exposition.

Institute Meet in London

London, July 10—The autumn meeting of the British Iron and Steel Institute will be held in London this year on account of the British Empire exhibition. The meeting, which will take place Sept. 4 and 5, will be held at the exhibition. Papers will be read on the morning of both days, the afternoons being devoted to sightseeing at the exhibition. A reception will be held at Princes Galleries, London, Wednesday evening, Sept. 3.

Good Year for Antimony

Antimony presented a more active market in 1923 than 1922, according to figures by the geological survey. The average price was 7.81 cents per pound, compared with 5.42 cents in 1922. Inasmuch as owners of antimonial ore deposits claim they can not make a profit with antimony selling below 20 cents per pound little was mined in this country. Smelter production of by-product antimonial lead was 14,190 tons, containing 2170 tons of antimony. Secondary recovery was 8021 tons, valued at $1,252,800. Imports were 1047 tons of antimony in ore and 7813 tons of metallic antimony, a total of 8860 tons of metal, valued at $762,790, compared with 8872 tons in 1922, valued at $600,283. Almost 75 per cent of imports came from China, with some from Mexico, the first since 1919; from Australia, the first since 1915 and some from the Straits Settlements, the first ever imported from there. War stocks now are absorbed and the outlook is more promising than at any time since the war.

Kanawha Mine Operators Break With Union

Charlestown, W. Va., July 22.—An open shop has been declared by mine operators in the Kanawha, W. Va., coal field, who have refused to subscribe to the Jacksonville agreement with the United Mine Workers of America. A new wage scale has been posted restoring the 1917 scale for tonnage miners, and a slightly higher rate than provided by that scale for day labor. Negotiations over wages have been in progress since March, when the agreement the operators had with the United Mine Workers expired. The operators declared they could not pay the 1922 wage scale, and compete. This was the last union agreement in southern part of West Virginia.

Part-Time Work General

New York, July 22.—A decrease of industrial activity and a decline in employment throughout New York state is reported by the director of the employment service of the department of labor. "Part-time employment in manufacturing plants is quite general," he says. "Slight curtailment in employment obtains in the iron and steel industries, metal trades, foundries and machine shops, locomotive and railroad repair shops, collar and shirt, worsted and knitting factories and in some instances automobile and accessory plants. Building and construction activities continue at a very encouraging rate and have absorbed a good portion of the released shop and mill labor. Farmers are experiencing less difficulty in obtaining the desired class of help."

Outlines Safe Practice

A safe practice pamphlet on mechanical refrigeration has been issued by the National safety council. Since increasing use is being made of mechanical refrigeration in industry and the home the hazards involved have been found to be considerable. The pamphlet is intended to be helpful in avoiding accident and health hazards.

William L. Collins, Hornell, N. Y., has been awarded the Bath-Savona road contract of 5.56 miles at bid of $222,302.

Establishes Scholarships

Pittsburgh, July 22.—Scholarships for the most capable students in mechanical and electrical courses at Ohio State university are provided in the will of the late Benjamin G. Lamme, electrical engineer, formerly chief engineer of the Westinghouse Electric & Mfg. Co., East Pittsburgh Pa. These scholarships will go to the two students making the highest grades in their senior year.

The will also provides a gold medal to be given yearly to a chosen technical teacher for unusual accomplishment in technical training or actual advancement in the art of technical teaching. It also provides for another medal to be given annually to a graduate of the university for meritorious achivement in engineering or the technical arts. Bequests also are provided for his brothers and sisters.

The Edison medal received by Mr. Lamme for his work in the electrical field and the Sullivan medal received from Ohio State university were bequeathed to Miss Florence L. Feicht, a niece of Mr. Lamme. A trust fund also was established to enable the American Institute of Electrical Engineers to award a gold medal to some member of the society who has shown meritorious achievement in the development of electrical apparatus or machinery each year. Russell Feicht, Mrs. Florence A. Lamme and John J. Jackson were appointed executors of the will.

Proceedings Published

Proceedings of the Society of German Engineers (Vereines Deutscher Ingenieure) at its annual meeting at Hanover May 31, have been published by the society. Papers dealt largely with airship and airplane engineering. A paper by Dr. L. Burr, Friedrichshafen, on the LZ 126, a Zeppelin type dirigible being built for America gives detailed illustrations and description of the gigantic craft. Unveiling of a tablet to members of the society who lost their lives in the World war was a feature of the meeting.

Announcements of manufacturers in the Hanover district make the volume large and contain much interesting matter in addition to the proceedings.

American La France Fire Engine Co., Elmira, N. Y., has booked a $60,000 order for motor equipment for the Boston fire department, making a total of about $500,000 in unfilled orders at beginning of July. This assures substantial operation during third quarter.

Yesterdays In American Industry

Events of News and Technical Importance Reproduced from IRON TRADE REVIEW of Corresponding Issues 10, 20 and 30 Years Ago

1894

July 19 IRON TRADE REVIEW

SUDDEN reversal of form in the strike situation took place in the week, the railroad strike ending and transportation being resumed, although the Connellsville coke strike and the Alabama coal strike remained. Steel mills resumed activity on old orders but demand was not revived.

* * *

Pig iron stocks were reduced from 326,000 tons to 254,000 tons.

* * *

Indications were that the season's shipments of iron ore would be 6,000,000 tons, of all grades.

* * *

In an article excerpted from another publication Edmund C. Peckin showed figures indicating pig iron could be and was being produced at Birmingham at $6.50 per gross ton, by two makers. He figured costs as follows: coke, $2.313; ore, $2.147; limestone, $0.164; labor, $0.795; incidentals, $0.940. This gives a total of $6.359. The figures were from the books of an important producer. He said: "A declining market and low prices have proved a blessing in disguise to the southerners, because it has shown them what they can do and the chances are that when market conditions improve, as they surely must, they will not retrograde."

* * *

A writer suggests that perhaps the small electric motor built into a machine tool may be better than long lines of shafting, revolving whether used or not.

* * *

Among steel men visiting in Europe were H. C. Frick; Joy C. Morse, president of the Illinois Steel Co., Chicago; Superintendent Charles M. Schwab of Homestead Works; S. T. Wellman of Cleveland; Julian Kennedy, Samuel Thomas, Catasaqua, Pa.

* * *

Blast furnaces of the United States as of July 1 included 109 charcoal stacks with 21,071 tons capacity; 240 bituminous or coke stacks with 218,686 tons capacity and 131 anthracite stacks with 55,997 tons capacity. Those in blast numbered 111, with a weekly production of 86,529 tons.

1904

July 21 IRON TRADE REVIEW

WRITING from Pittsburgh a representative says: "Official prices on billets are a farce, with commissions to brokers ranging from $1.50 to $2 per ton and rebates to consumers of the same amount on account of defective steel (before the material is rolled)."

* * *

The steel freighter AUGUSTUS B. WOLVIN set a new record in ore carrying July 13, clearing from Escanaba with 10,973 gross tons or 12,285 net tons, for South Chicago. This was unloaded the next day in less than 10 hours. The previous record had been 8807 gross or 9864 net tons carried in 1903 by the steamer WILLIAM EDENBORN.

* * *

African golf was practiced in 1904. Charles H. Thomas, Newark, addressing the American Foundrymen's association on apprentices predicted one applicant would "graduate as a crap shooter or Tammany leader or perhaps worse."

* * *

An advertisement of the Republic Iron & Steel Co. reveals that its main offices were in Chicago at that time.

* * *

Contracts for material for the Pennsylvania tunnel at New York were being let and involved a large tonnage of pig iron. But the long period of delivery made it less of a feature than otherwise.

* * *

Michigan and Wisconsin producers of charcoal iron had entered into an agreement to reduce production during the remainder of the year.

* * *

Ernest F. DeBrul, retiring commissioner of the National Metal Trades association, was presented a loving cup by the administrative council.

1914

July 23 IRON TRADE REVIEW

PRODUCTION of steel in 1913 established a new record with 31,300,874 tons, compared with 31,251,303 tons in 1912, a gain of 49,571 tons, according to the statistics of the American Iron and Steel institute.

* * *

Joseph T. Ryerson & Son, Inc., took over the steel warehouse of the W. G. Hagar Iron Co., St. Louis, to operate it as a branch warehouse.

* * *

The Wheeling Steel & Iron Co. and the Wheeling Sheet & Tin Plate Co. were merged, the former buying the stock of the latter.

* * *

In an article on the Tata Iron & Steel Co., of India, the statement was made that its low cost of production, about $6 per ton for pig iron and $15 per ton for billets, with ocean freight of $5 to $6 to Pacific ports, made it a rival of American producers. The Tata company now has a tariff to protect it against competition from the remainder of the world.

* * *

Fluorspar production in 1913 was 115,580 short tons, valued at $736,286. The average price through the year was $6.37 per ton.

* * *

An editorial discusses the non-binding contract of the steel industry, which operates to the disadvantage of the producer.

* * *

Much amended, the Clayton bill was reported to the senate after being passed by the house, various provisions being modified materially.

* * *

Cement prices were advanced 5 cents per barrel to $1.05 and $1.10.

Some Prices from the Past

	July 23, 1914	July 21, 1904	July 19, 1894
Basic, Pittsburgh	$13.90	$12.35	....
Bessemer, Pittsburgh	14.90	12.60	$11.90
No. 2 Foundry, Pittsburgh	13.90	12.35	10.50
No. 2 Foundry, Chicago	14.00	13.50	10.00
Lake Superior Charcoal	16.00	14.50	14.50
No. 2 Southern, Birmingham	10.00	9.25	....
Bars, Steel, Pittsburgh	1.10c	1.35c	....
Bars, Steel, Chicago	1.28c	1.40c	1.25c
Heavy melting steel, Pittsburgh	12.00	10.75	....
Heavy melting steel, Chicago	9.50	9.50	6.00

Men of Industry

Personal News of a Business Character Pertaining to the Iron and Steel and Related Fields of Enterprise

B. L. WORDEN, recently elected president of the Cutler-Hammer Mfg. Co., Milwaukee, manufacturer of electric control equipment, for 20 years was president of the Worden-Allen Co., that city, and Lackawanna Bridge Co., Buffalo, structural steel fabricators, both of which he founded. For about five years he was president of the Ferguson Steel & Iron Corp., Buffalo. Mr. Worden sold his interests in these organizations about two years ago. He was general manager of the yard at Newark, N. J., belonging to the Submarine Boat Corp., during the war. He had charge of constructing the yard and 150 duplicate fabricated steel ships built there for the Emergency Fleet corporation. For the past two years Mr. Worden has been active in the Beaver Board Co., where he was president. Lately he retired and was elected chairman.

F. R. Bacon, for 27 years president of the Cutler-Hammer company, was elected chairman of the board at the recent meeting of directors. He was president of the American Rheostat Co., Milwaukee, founded in 1896 and which in 1898 bought the Cutler-Hammer Mfg. Co., Chicago. Mr. Bacon had been president of the company continuously since that date. Mr. Bacon is president of the Niagara Smelting Corp., Niagara Falls, N. Y., member of the board of trustees of the Northwestern Mutual Life Insurance Co., Milwaukee, member of the board of the Bucyrus Co., South Milwaukee, builder of steam shovels and excavating machinery, and many other companies.

* * *

E. L. Raysor has been appointed superintendent of the Valley Mould & Iron Corp., Sharpesville, Pa.

* * *

L. E. Crandall, former vice president in charge of sales, merchandising and distribution of the Winchester-Simmons Co., St. Louis, has joined the Wickwire-Spencer Steel Corp.

* * *

Herman A. Wagner, president of the Wisconsin Bridge & Iron Co., Milwaukee, has returned from a tour of three months in Germany, France, Austria and Switzerland.

* * *

M. A. Bell, president of the Independent Foundry Supply Co., 4746 Greer avenue, St. Louis, manufacturer and dealer in foundry supplies, platers and polishers equipment, etc., formerly was connected with the E. J. Woodison Co. For the last six years he had been branch manager at St. Louis of the latter company.

* * *

Frank C. Hodkinson has been appointed vice president and general manager of the American Circular Loom Co., manufacturer of thin wall steel

B. L. WORDEN

tubing with headquarters at 90 West street, New York, and plant at Kenilworth, N. J. Mr. Hodkinson was secretary and had charge of sales of the Garland Mfg. Co., Pittsburgh.

* * *

William W. Coleman, president of the Bucyrus Co., South Milwaukee, Wis., is back from a two months' trip to England, France and Belgium.

* * *

M. F. Beetham has succeeded C. H. Erickson as service inspector in the eastern district for Whiting Corp., Harvey, Ill., manufacturer of cranes and foundry equipment.

* * *

B. W. Stone has resigned as manager of the New York branch office of Kearney & Trecker Corp., Milwaukee, manufacturer of milling machines. He is succeeded by W. P. Lotz.

* * *

William E. Friedman, manager of the New York office of E. B. Leaf Co., that city, dealer in iron and steel, machinery, etc., has resigned from that connection. He will be succeeded by Mr. Spitzer.

* * *

Brinton Welser, who had been assistant secretary and assistant sales manager of the Chain Belt Co., Chicago, recently was elected secretary of the company.

* * *

Louis K. Liggett has been appointed to succeed John E. Otterson as president of the Simmons Hardware Co., St. Louis, and J. Clark Coit, president of the Winchester Simmons Co., St. Louis, has been appointed vice president and general manager.

* * *

W. A. Cather, recently made sales manager of the Barrett Haentjens Co., Hazelton, Pa., manufacturer of centrifugal pumps, formerly was in charge of advertising and sales promotion for the Worthington Pump & Machinery Corp., New York.

* * *

James A. Galligan, has resigned as vice president of W. H. Harris & Co., 343 South Dearborn street, Chicago, dealer in coal and coke. Mr. Galligan has been prominent in the coke industry for many years and it is his intention to continue in that field. He was identified with Solvay coke interests prior to his work the past year on by-product coke.

* * *

H. C. Breidert, contracting engineer at the Chicago office of the Fort Pitt Bridge Works, fabricator and erector of steel bridges, mill buildings, etc., has been transferred to the main offices of the company at Pittsburgh, as chief contracting engineer.

E. K. Adams succeeds Mr. Breidert as contracting engineer in the Chicago office.

* * *

Harry F. Stimpson, has resigned as president and general manager of Wheelock, Lovejoy & Co., Inc., withdrawing from all active participation in the company's control. Mr. Stimpson has been actively connected with the steel industry for 33 years. He retires to devote more time to his real estate holdings.

A. Oram Fulton, for 15 years connected with Mr. Stimpson, and vice president of the Wheelock company since its incorporation, has been elected president and general manager. Frederick H. Lovejoy has been elected vice president to succeed Mr. Fulton.

Obituaries

HAROLD Colbert Jones, for many years a vice president and director of the Inland Steel Co., Chicago, and more recently president of the Mid-West Forging Co., that city, died July 18, from pneumonia following an illness of only four days. Mr. Jones, was the only son of G. H. Jones, a director of the Inland company and president of the Hillside Fluor Spar Co., Chicago. Harold Jones was graduated from the Chicago manual training school, now a part of the University of Chicago, and completed his education with a course in mechanical engineering at Cornell university, from which he was graduated in 1896. After a short term in the drafting department of the Link-Belt Co., Chicago, Mr. Jones went with the Inland company, becoming night superintendent of the Indiana Harbor plant and later taking charge of the Chicago Heights plant. Mr. Jones devoted special attention to the latter plant. On July 1, 1923, he resigned his vice presidency and directorship and became president of the Mid-West company. Mr. Jones, who was 46 years old at the time of his death, was a member of the American Society of Mechanical Engineers, the American Iron and Steel institute and the Chicago Athletic association. He was one of the most widely known and best-liked men in the steel industry in Chicago.

* * *

Arthur W. Hooper, retired treasurer of the Winchester Arms Co., New Haven, Conn., died recently at Boston.

* * *

Grant Hubley, vice president and director of the Oil Well Supply Co., Oil City, Pa., and Pittsburgh, died July 19 at the age of 59, at the Homeopathic hospital, Pittsburgh, as the result of injuries received June 30 when he was struck by an automobile.

* * *

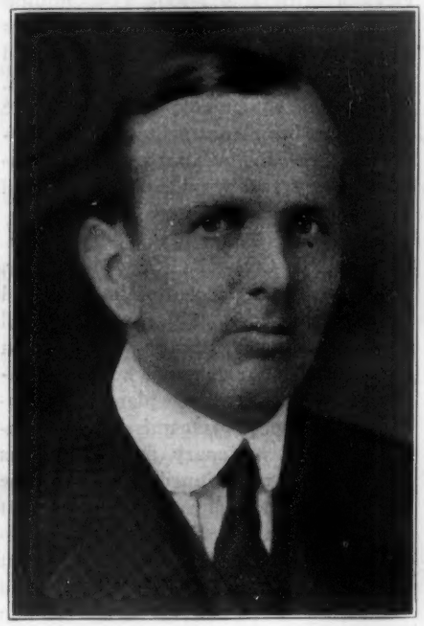
Riley L. Redpath, general manager of manufacturing of the American Radiator Co., Buffalo, N. Y., died July 18 at the age of 53 years. He had been connected with the American company for 30 years. During the war he served as a member of the railroad labor board in Washington.

* * *

John Henry Cremer, senior member of the Cremer-Case Co., Cleveland, chemist and metallurgist, died July 20 at the age of 78 years. He was born in Batavia, Island of Java, and was educated in Paris, France and the University of Liege, Belgium. Mr. Cremer came to America when he was 21 years old and at various times managed blast furnaces in Milwaukee, Chicago and Pittsburgh, being in charge of the Braddock, Pa. plant of the Carnegie Steel Co. in the latter city.

* * *

August Schwenn, president of the H. P. Deuscher Co., Hamilton, O., doing a general foundry business, died July 16 at Hollywood, Cal. Mr. Schwenn became ill several months ago of heart disease and went to California for his health.



HAROLD COLBERT JONES

He had been president of the H. P. Deuscher Co. since 1913.

* * *

Isaac H. Denton, head of Denton & Anderson Co., Cleveland sales representative of the Ohio Seamless Tube Co., Shelby, O., died at his home in Cleveland Heights, July 15, at the age of 49. Mr. Denton was born in Barker, N. Y., May 2, 1875 and came to Cleveland 30 years ago. He became connected with Davis, Hunt & Collister Co., wholesale hardware and mill supply dealer. After that he joined the Winton Bicycle Co. and served as secretary for the Cleveland Tool & Spike Co. for several years. He was a director of the Ohio Seamless Tube Co. He had formed the Denton & Anderson organization 14 years ago.

* * *

Edmund J. Kasel, general superintendent and one of the owners of the Janson Steel & Iron Co., Columbia, Pa., manufacturer of bar iron and steel, died July 15 at the age of 42 years, following an operation for appendicitis. Since finishing his education Mr. Kasel had been connected with the Columbia company continuously.

* * *

Howard Field Chappell, formerly vice president and an organizer of the General Chemical Co., died recently at the Lorraine hotel, New York, aged 63 years. His death followed a short illness. Mr. Chappell was born in St. Louis, and was educated at the Chicago academy and the Sheffield scientific school, Yale university, where he graduated in 1881. After completing his studies at Hanover, Friboug and Berlin, he joined the government ethnological bureau. Later he became associated with his father, William Henry Chappell, in the organization of the Chappell Chemical Co., Chicago. He also assisted in the organization of two Chicago banks.

* * *

Conrad Christian Arensberg, president and director of the McCullough-Dalzell Crucible Co., Pittsburgh, died July 18 aged 84 years at his home there after having been ill with bronchial pneumonia for several weeks. Mr. Arensberg was one of the oldest manufacturers of crucibles for steel plants and foundries in the United States. He was born in Pittsburgh, Aug. 17, 1840 and in 1872 he, in association with John and Willis Dalzell and Michael McCullough, organized the McCullough-Dalzell Crucible Co. At the outbreak of the Civil war he enlisted in Hampton's Independent Battery F., Pennsylvania light artillery, with which he served continuously until severely wounded at Boonsboro, Md., a few days after the battle of Gettysburg.

* * *

Lawrence Fitch, president of the Western Malleables Co., Beaver Dam, Wis., and prominently identified with large metalworking industries in Milwaukee and elsewhere for many years, died July 16 of acute diabetes. Mr. Fitch was born in Milwaukee on Oct. 11, 1874. He was graduated from Yale in 1898 and joined the Railroad Supply Co., Chicago. In 1905 he was elected vice president of the Beaver Dam Malleable Iron Co., becoming president upon its reorganization as the Western Malleables Co. several years ago. In 1910 he founded the Globe Seamless Steel Tubes Co., Milwaukee, retiring when new interests purchased the company about two years ago.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

AN EXPANSION program involving a new plant and purchase of additional equipment is being started by the Parker Appliance Co., 2420 Superior viaduct, Cleveland, manufacturer of brass, copper and monel metal tubing, for all purposes. The company recently purchased two lathes, two drill presses, two screw machines, a tool room grinder, a 20-inch shaper and a punch press to augment the equipment already in use. The purchase of additional automatic screw machines, both single and multispindle, is planned for the near future. Installation of a pattern shop also is planned. At present 1-inch tubing is the largest handled, but after expansion practically all sizes will be fabricated. Aluminum tubing is fabricated for aeronautical purposes, the government and several large airship builders being among its customers. A. O. Parker is president of the company which has been incorporated for six years. C. E. Klamm is treasurer.

* * *

THE Bethlehem Steel Corp., has placed contracts with Arthur G. McKee & Co., Cleveland, for electric bell operating rigs, which will be installed on Nos. 10 and 11 blast furnaces at Johnstown, Pa.

* * *

CHICKASHA Gas & Electric Co., Chickasha, Okla., an important unit of the Byllesby system, is completing a $175,000 expansion program including the building of a new power house, power lines and installation of new generating and transforming equipment.

* * *

THE foundry of the Gillespie Eden Corp., Paterson, N. J., has been purchased by a group of foundrymen who will place it in early operation. The purchase price is said to be around $350,000. The foundry was erected shortly after the war and for the past year has been idle.

* * *

HINDERLITER TOOL CO., Tulsa, Okla., manufacturer of oil well equipment tools, recently opened a complete field plant at Okemah, Okla., to better serve the oil trade. It has acquired the plant of the Standard Machine Co. and added improvements by the addition of new machinery, etc. Frank Hinderliter, pioneer in Southwestern metal trades industry, is president of the company.

* * *

HOOKLESS FASTENER CO., Meadville, Pa., is constructing another unit in addition to its present three plants, the new construction to be 70 x 70 feet, five stories high. The company will purchase chutes, a small elevator with 2 x 2-foot base, milling machines, drill presses, etc., furnaces for annealing nickel and silver and heat treating tools, office equipment, stock room equipment, etc. All of the work has been contracted for, according to H. R. Walrath, superintendent, except millwright, electrical, and a few minor installations.

* * *

DORING CO., INC., 350 Broadway, New York, recently incorporated with 10,000 shares, $10 par value, will manufacture gear brakes for freight and passenger elevators, hoisting machinery, etc. It also plans developing an all-speed transmission for automatic and stationary machines. This transmission is designed to replace the multiple cone-pulleys for different speeds. Frederick W. Duerk is president, Frank L. Otto, vice president and Albert B. Doring, secretary and treasurer. The officers and William F. Kluecker and Max B. A. Doring are directors.

* * *

NEWPORT NEWS SHIPBUILDING & DRY DOCK CO., Newport News, Va., will begin shipment about Sept. 15 of 58 gates for the Wilson Dam Muscle Shoals development on the Tennessee river. Contracts for the construction and installation of the gates was awarded the Newport News company early in May. The gates involve between 2000 and 3000 tons of structural steel. Contracts for the operating mechanism for the regulating gates recently was awarded to the Hardie-Tynes Mfg. Co., Birmingham, Ala., instead of for the construction work as previously announced.

* * *

WORK is progressing on an addition to the fabricating plant of the Lakeside Bridge & Steel Co., North Milwaukee, Wis., which is expected to be ready about Sept. 1 or 15. The size of the present shop is being doubled by an addition of 175 x 400 feet, and this will give the company a monthly capacity of from 1500 to 2000 tons. Practically all of the equipment has been purchased. The Lakeside company is building its own cranes, three of which will be installed. Two are 10-ton and one is a 5-ton hoist, all with 70-foot span. V. W. Coddington is president, S. C. Coddington, treasurer and general manager and C. G. Margwarth, vice president and assistant manager.

* * *

COMPLETE reorganization of the S. F. Bowser Co., Fort Wayne, Ind., manufacturer of clarifying systems, oil and gasoline tanks and pumps and water softeners, which recently came under the direction of a creditors committee, was effected July 7 when practically a new board of directors was named. The new board is composed of S. F. Bowser, S. B. Bechtel, Henry C. Paul, William J. Vesey, Robert M. Fuestel, Dr. G. M. Leslie, B. Paul Mossman, all of Ft. Wayne, and Charles N. Gillette of the First National bank of Chicago. The board elected the following officers: S. F. Bowser, chairman; S. B. Bechtel, president; D. A. Corey, vice president; H. J. Grosvenor, secretary and treasurer; W. A. Bersch, controller, and William J. Vesey, general counsel. The creditors' committee consisting of Chicago and New York bankers took over the affairs of the company in May.

* * *

THE Watson Engineering Co., 15 Park Row, New York, recently organized as a partnership consists of the following members: Wilbur J. Watson, president of the Watson Co., Cleveland, and consulting engineer of the Dock & Terminal Engineering Co., that city; Charles D. Watson, formerly New York vice president and eastern manager for the Watson Co., Cleveland; and Stanley H. Chadwick, formerly associated with the H. D. Best Co., New York.

The new organization will perform engineering services for all classes of industrial plant work under a form of contract that will include personal service for both office and field operations. It is affiliated with the Watson Co. of Cleveland and will act as the representative of the latter company and for the Dock & Terminal Engineering Co. Stanley H. Chadwick will specialize in foundry work.

Recent Industrial Business Changes

NORTON CO., Worcester, Mass., manufacturer of grinding wheels and machines, has appointed Mitsubishi Shoji Kaisha, Ltd., Tokio, Japan as exclusive sales agent for products of the Norton Co. in Japan, Formosa, Korea, Manchuria and Shantung. The Mitsubishi company has a New York office at 120 Broadway.

* * *

Edw. H. Hansen Machine Co., Chicago, has been dissolved.

* * *

William Zoeller Co., Chicago, has changed its name to the William Zoeller Machinery Co.

* * *

Troy Coke & Iron Corp., Troy, N. Y., has changed its name to the Hudson Valley Coke & Products Corp.

* * *

The French Creek Foundry, Franklin, Pa., has been purchased by the Franklin Valveless Engine Co., to replace its foundry which was badly damaged by fire May 23.

* * *

The Armstrong Cork & Insulation Co., Pittsburgh, announces the removal of its offices at Omaha, Neb., to new and larger quarters at 532 Peters Trust building.

* * *

Jones Oil Well Reamer Co., Tulsa, Okla., has re-incorporated with capital of $100,000 on moving its plant from Independence, Kan., to Tulsa. The company has taken over the old Crescent Tool Co. plant occupying a site of 60 x 160 feet and will manufacture a special line of oil well supplies including an oil well reamer. Incorporators are A. S. Jones, E. G. Hastings and H. J. Williams, Jones being president, Hastings, secretary and treasurer and George Snedden, vice president, respectively of the company.

* * *

The Herbert F. Topp & Co., Cincinnati pig iron and coke dealers, have been dissolved according to an announcement made by Fred W. Lammers, the surviving partner of the business. Mr. Topp died July 24, 1923, and since that time the business has been operated by his widow, Mrs. Bertha M. Topp and Mr. Lammers. Dissolution of the company was by mutual agreement. Mr. Lammers will resume his law practice. The Gauley Mountain coke agency which the company held for several years has been assigned to Crocker Bros., New York and Cincinnati.

* * *

Indiana Pump & Tube Co. has changed its principal place of business from Indianapolis to Greenwood, Ind., about 10 miles south of Indianapolis.

* * *

Central Steel Co., Massillon, O., has opened a direct sales office in New York, in charge of C. C. Willits. Offices of the company in New York temporarily will be at the Commodore hotel. Offices will be established shortly in a more permanent business location.

* * *

Marine Electrical Generating Corp., Galveston, Tex., has changed its name to the Steamship Supply Co. The company deals in generating equipment and other supplies for the steamship trade.

* * *

McCabe & Sheeran Machinery Corp., 50 Church street, New York, has taken over the equipment of the Power & Mining Machinery Works, Cudahy, Wis., and has opened an office in the latter city in charge of H. P. McCabe.

* * *

Mitchell & Mitchell, bed spring equipment manufacturers of Fort Smith, Ark., have taken over the Fort Smith Metal Products Co., a similar business, through consolidation and announce that manufacture of all lines of products will be continued. Albert Mitchell continues as president of the company.

* * *

The Pangborn Corp., Hagerstown, Md., manufacturer of sand blasts and dust arresters, has moved its Cleveland office to 622 Penton building, where John C. Pangborn, vice president, is in charge. He will be assisted by F. E. Wolf.

* * *

The Weir Stove Co., Taunton, Mass., has reincorporated as the Glenwood Range Co. This change was to conform with the name of its product, which it had been making for many years. So far as can be learned, no other changes were brought about by the new incorporation.

* * *

H. Hollesen, Inc., has moved into a new suite of offices on the fourteenth floor of 17 Battery Place, New York. The company is the American representative of the Stinnes interests in Germany and is an extensive importer of fluorspar.

The office formerly was located at 44 Beaver street, that city.

* * *

The Pilot Mfg. Co., Galt, Ont., has purchased the Perfect Machinery Co., and will remodel and enlarge for manufacture of milking machines, dairy supplies, etc. The company also will manufacture aluminum washing machines.

* * *

The Tuscaloosa Iron Works, Tuscaloosa, Ala., formerly owned by J. W. Thompson, recently was incorporated for $100,000. Mr. Thompson is president and general manager of the new incorporation, with R. A. Craighead as vice president and W. E. Latham as secretary and treasurer.

* * *

The Galt Machine & Screw Co., Galt, Ont., has purchased the assets and patent rights of the Touring Car & Euipment Co. and will manufacture automobile tops.

* * *

The Triumph Electric Co., Cincinnati, manufacturer of motors, has appointed W. C. Fletcher Co., 1016 Fletcher Trust building, Indianapolis, as representative for sale of its motors in the southern half of Indiana.

* * *

York Corrugating Co., 429 South Second street, Harrisburg, Pa., plans moving about Oct. 1 to a warehouse in South Tenth street, near Mulberry. The company does a sheet metal business.

* * *

The Industrial Works, Bay City, Mich., builder of cranes, has opened a new district office at 455 Monadnock building, San Francisco, in charge of J. M. McGuire, district sales manager. Mr. McGuire had been connected with the company for 20 years.

Machine Tool Market Stronger

Railroad Buying Comes to Foreground as Industrial and Automotive Demand Remains Dormant —Norfolk & Western, Missouri Pacific, Nickel Plate and Other Roads Are Active— Used Equipment Sales Continue To Lag—Crane Field Recovers Somewhat

SLIGHT betterment again is noted in the machine tool and equipment market. Buying by the railroads and inquiries from those sources have strengthened the situation. Norfolk & Western has placed from 10 to 15 tools, although all orders have not been confirmed. Pennsylvania bought a heavy duty machine, Missouri Pacific closed on two large tools and the St. Louis & San Francisco took a 400-ton wheel press. The Central Vermont railway and the Maine Central have lists prepared although authority yet is lacking to buy. Nickel Plate came into the market for five machines. Sante Fe is expected to place the additional units of its list for shops at San Bernardino, Cal.

Industrial buying continues dormant. General Electric Co., Westinghouse Electric & Mfg. Co., Westinghouse Airbrake Co., and others are tentative buyers but no action is being taken on their requirements. Boards of education continue to bring out lists for vocational schools but this trade also is slow in action, the Chicago list being pending now for two months.

Used equipment sales lag, with price concessions a large factor. Auction sales cut into this class of business, but keen competition among dealers also is weakening the used equipment market.

Crane activity has recovered from the slump of the last few weeks. The largest inquiry recently brought out is that of the Bethlehem Steel Corp. for 32 overhead electric cranes. With the exception of a few large inquiries general demand is no better, but sentiment is considerably more cheerful.

Miscellaneous Equipment Buying Is Featureless

NEW YORK, July 22.—With the exception of further buying by the Norfolk & Western, the local machine tool market continues listless. Considering the industry as a whole, orders are at less than 20 per cent of capacity, and little in the way of material improvement is looked for much before September. Production has been curtailed materially with the result that surplus stocks are not large and it is believed that the first definite turn in business conditions would be early reflected in the machine tool industry.

Included in recent orders to be placed with the Norfolk & Western are: two 28-inch, 600-ton double hand wheel presses; a six-inch spindle horizontal floor borer; and a cotter and key seat milling machine, placed with one builder; and two turret lathes, a wheel press, two punches and shears, and several pipe machines, reported as going to another. It is under stood that the list now has been practically closed. Of further interest in connection with railroad work is the award to the Foundation Co., 120 Liberty street, New York, of two large contracts by the Southern railway for the expansion of its facilities at Knoxville, Tenn., and Atlanta, Ga. While the Tennessee project is primarily a classification yard, a large machine shop and roundhouse will be erected among other buildings. The Southern has just closed bids on several woodworking machines.

The Missouri Pacific has closed on a 48-inch car wheel borer and a 400-ton double end wheel press, while the St. Louis & San Francisco has also closed on a 400-ton wheel press. Industrial buying includes a 1500-pound steam hammer for the American Sheet & Tin Plate Co., Pittsburgh; a 36-inch engine lathe for Hollingsworth & Whitney Co., Boston; and a 22-inch surface grinder and two sensitive drill presses for the Harrison, N. J. plant of the General Electric Co.

Much interest in the overhead crane market is manifested in the inquiry of the Bethlehem Steel Corp., noted as pending in last week's issue and involving 32 overhead electric cranes for its Johnstown, Pa., and Lackawanna, N. Y., plants. This is by far the largest inquiry to appear in the local market in many weeks. The crane market as a whole tends toward dullness.

Betterment Is Noted

CLEVELAND, July 22.—A slight betterment in machine tool demand was noticed in the local market last week, railroad buying being a strengthening factor. The largest order placed in some time was that of the city waterworks commisison in buying four machines for its Fairmount reservoir project. These consisted of a 30-inch by 22-foot lathe, a 24-inch shaper, a radial drill and pipe machine, this business going to the Motch & Merryweather Machinery Co. Clark Machinery Co. closed several large orders recently, the most prominent being that with the Parker Appliance Co. which interest lately has bought two lathes, two drill presses, two screw machines, a tool room grinder, a 20-inch shaper and a punch press. Hookless Fastener Co., Meadville, Pa., is another industrial buyer. It is buying milling machines, drill presses, furnaces for annealing nickel silver and heat treating tools.

Norfolk & Western has placed a few orders in this district although these have not been confirmed. The Missouri Pacific bought a turret lathe in this territory and the Pennsylvania closed on a heavy duty machine. The Nickel Plate has an inquiry out for five large machines, the list including two lathes, a bolt cutter, a horizontal flange punch and a 54-inch vertical turret lathe.

Inquiry was more active last week, although sales still are hard to close. The tendency persists among buyers to postpone purchases until they are absolutely necessary.

Used equipment demand lags, with auction sales cutting into this class of business. Prices have no stability in the present used tool market, many dealers making drastic reductions where necessary to get orders.

Crane inquiries have picked up slightly with a corresponding quickening of sales. A good volume of business is in prospect but the postponement tendency still prevails. A large demand for used equipment exists and dealers report good prices are being obtained. One manufacturer reports a 10 per cent reduction on cranes by an Illinois builder, but this as yet is unconfirmable.

Dearth of Activity Continues

CHICAGO, July 22.—Dealers in machine tools continue to report a dearth of active inquiry and they

are unable to transform into present business those inquiries for tools which appear dependant upon an increase in general industrial activity. The placement of a few additional tools by the Santa Fe railroad for its new shop at San Bernardino, Cal., is expected this week. The final disposition of the remainder of the board of education's list for its technical high schools was to be decided at a committee meeting today and ratified by the board tomorrow. The conflict over this award appears to hinge upon the lathes. One machinery house has sold a large milling machine, a large radial drill and several small tools to a northern Illinois manufacturer. This house also has placed two No. 3 punch presses with a Chicago interest.

Manufacturers More Hopeful

BOSTON, July 22.—Machine tool dealers throughout the district continue to find sales few and far between but manufacturers are decidedly more hopeful over conditions. In several lines the export demand has improved and many builders of standard tools report an improved domestic demand since July 1. One Connecticut manufacturer of production equipment has received an order from an automobile manufacturer which extends his capacity operation another month into the future. Recent inquiry for individual tools comes from paper mill machine manufacturers, from drop forge plants and two or three from textile mills. A western Massachusetts manufacturer bought a special shaper, an automatic screw machine, and a drill. The Central Vermont railway and the Maine Central have lists prepared but lack authority to buy. Prices of new tools remain firm.

Sales Are in Small Volume

PITTSBURGH, July 22.—Trading in both new and used machinery does not comprise much volume, although one dealer witnesses an improvement and states that sales this month so far are double those in June. Among other items the Reliance Machinery Sales Co., which was low bidder on the equipment wanted by the County Garage, Parkview, Pa., has received orders for a 20-inch motor driven shaper, an 18-inch x 8-foot motor driven lathe and a 3-foot motor driven radial drill. The hydraulic press went to W. K. Stamets. Other sales by the first mentioned interest include two milling machines and three manvil thread rollers with 10 or 12 miscellaneous small items, lathes, drill presses, grinders, hacksaws, etc. Dealers report that orders are commencing to come in on quotations filed in March and April. The Western Maryland railroad, Baltimore, is expected to buy equipment for a locomotive repair shop at Dunbar, Pa. A list is expected from the Fairmont, W. V., board of education. Used machinery sellers report a fair movement, particularly those who recently have issued new stock lists and circulars. When a machine is needed or to be needed shortly and when the price is attractive the sale is effected. Action on some of the larger lists, like the National Tube Co., the Carnegie Steel Co., the Westinghouse Electric & Mfg. Co., still is deferred and the latter interest is understood to have cut down on its requirements considerably.

Numerous crane inquiries still are pending, including these for several of the Westinghouse Electric & Mfg. Co., the Bethlehem Steel Co., the Carnegie Steel Co., the Jones & Laughlin Steel Co., the Westinghouse Airbrake Co., and those involving one each from the Superior Steel Products Co., Parkersburg Machine Co., and others. Crane awards are not numerous, the two 35-ton cranes with 5-ton auxiliaries for the pig casting plant and power house at Toledo, O., for the Pickands, Mather & Co, being ordered by Julian Kennedy, engineer, from the Alliance Machine Co.

Crane Awards and Inquiries of the Week

Orders Placed

Six 20-ton handpower cranes for the Long Island railroad, placed with an unnamed builder; no action will be taken by this railroad on its inquiry for four 20-ton electric cranes until August.

Two 35-ton cranes, both with 5-ton auxiliaries, through Julian Kennedy, Pittsburgh engineer, for the pig casting plant and power house at Toledo, O., of Pickands, Mather & Co., Cleveland, the former with 40-foot span and the latter with 41-foot 6-inch span, to the Alliance Machine Co.

Two 30-ton, for a contractor in Detroit, to McMyler-Interstate Co.

Single Installations

10-ton electric overhead crane for the Spencer, N. C., shops of the Southern railways, to the Pawling & Harnischfeger Co.

10-ton, 3-motor overhead crane, 45-foot span, for a power house in Cuba, placed with the Whiting Corp.

10-ton, 4-motor bucket handling crane, 30-foot span, awarded through Asano Bussan Co., 165 Broadway, New York, for a cement plant in Japan, to the Whiting Corp.

One transfer table for the Delaware, Lackawanna & Western railroad, to the Whiting Corp.

20-ton used locomotive crane for the Knoxville, Tenn., shops of the Southern railway, to Philip T. King, 30 Church street, New York.

35-ton used locomotive crane for the Public Service Corp., Newark, N. J., to Philip T. King, 30 Church street, New York.

25-ton locomotive crane for Arthur McMillan, New York, placed, the contract reported as going to the Ohio Locomotive Crane Co.

10-ton electric crane, 80-foot span, placed by the Fitzgibbons Boiler Co., New York, for its plant at Oswego, N. Y., with the Cleveland Crane & Engineering Co.

35-ton, 1-motor crane, 48-foot span, for a power plant, placed by E. L. Phillips & Co., 50 Church street, New, York, engineers, with the Whiting Corp.

10-ton, 4-motor, 48-foot span electric traveling crane for the Westinghouse Electric & Mfg. Co., Trafford City, Pa., to the Morgan Engineering Co.

5-ton, 1½-cubic yard, 3-motor, 2-line bucket handling trolley with 19-foot span for the Gary, Ind., tube works of the National Tube Co., to the Cleveland Crane & Engineering Co.

5-ton crane with 100-foot span for the Pittsburgh Steel Co., Monessen, Pa., to an Ohio builder.

10-ton, for an excavating contractor in Cleveland, to McMyler-Interstate Co.

10-ton, for a general contractor in Chicago, to McMyler-Interstate Co.

10-ton, for a sand and gravel company in Cleveland, to McMyler-Interstate Co.

Orders Pending

Thirty-two electric overhead cranes for the Johnstown, Pa., and Lackawanna, N. J., plants of the Bethlehem Steel Corp., pending, this inquiry being noted in last week's issue. Of this number, 17 are for the Johnstown, Pa., plant as follows: four 10-ton cranes, 106-foot, 6-inch span; six 10-ton cranes, 97-foot 6-inch span; two 10-ton cranes, 56-foot 6-inch span; two 10-ton cranes, 81-foot 6-inch span; one 10-ton crane, 66-foot 6-inch span, and one 20-ton crane, 36-foot 6-inch span; of the remaining 15 cranes for Lackawanna, two are of 75-ton capacity each, while others range from five to 25 tons capacity.

Six electric overhead cranes for the Atlanta, Ga., shops of the Southern railway, pending; two of these cranes will be of 100 tons capacity each, while the remainder will be of 10 and 15 tons capacity; the general contract for these shops has just been placed with the Foundation Co., 120 Liberty street, New York; the cranes will be bought through the Southern railway's offices at Washington, D. C.; the Southern has closed just recently on a contract to the Foundation Co. for the erection of shops and a classification yard at Knoxville, Tenn.; as noted in a previous issue, this project will require five electric overhead cranes, on which bids are to be taken through the Washington, D. C. offices of the Southern railways.

Five 5-ton cranes, one 3-ton crane and five hoists, 3-ton, 2-motor for the Westinghouse Airbrake Co., Wilmerding, Pa.; matter still in abeyance—decision probably will be reached within a week.

Two gantry cranes for the Pennsylvania railroad; matter still in abeyance.

Two locomotive cranes wanted by Allegheny county; bids taken until July 30 by John P. Moore, county controller, Allegheny county, Pittsburgh.

20-ton standard gage, locomotive crane, for Lewter F. Hobbs, Inc., Monticello avenue, Norfolk, Va.; pending.

10-ton traveling crane, for Howard Shipbuilding Co., Jeffersonville, Ind.; pending.

12 to 15-ton, 50-foot boom eight wheel locomotive crane for R. E. Suggs, 1516 Healey building, Atlanta, Ga.; pending.

1-ton electric crane for H. G. Wild, 653 Clinton street, Milwaukee; pending.

10-ton traveling crane for Bridgeport Safety Emery Wheel Co., Knowlton street, Bridgeport, Conn.; pending.

20 to 25-ton, 40 to 45-foot boom, eight wheel locomotive crane for Wilson-Hock Co., City Point, Hopewell, Va.; pending.

10 to 15-ton, eight wheel locomotive crane for the North State Lumber Co., Charleston, S. C.; pending.

10-ton ore bridge for Carrie furnace of the Carnegie Steel Co., and 10-ton cinder crane for the Homestead works, together with other crane equipment; early action expected.

5-ton crane for the Parkersburg Machine Co., Parkersburg, W. Va.; action deferred.

5-ton crane for the Superior Steel Products Co., Monaca, Pa.; matter still in abeyance.

Wall crane for the Sharon, Pa., transformer plant of the Westinghouse Electric & Mfg. Co.; quotations being compiled.

Construction and Enterprise

Concise and Timely Business Building Opportunities from the Field of Industry

Where additional information is presented, reference is made to date of issue in which previous items appeared.

AVONDALE, ALA.—Construction has been started by H. Kfl Ferguson Co., Cleveland, engineer and architect, on a foundry, 135 x 400 feet and a machine shop, 150 x 300 feet, for the Continental Gin Co. L. R. Munger, Title Guarantee building, Dallas, Tex., is president.

BIRMINGHAM, ALA.—The Redd Chemical & Nitrate Co., recently incorporated for $400,000, is constructing a plant for the manufacture of chemicals. William P. Redd, formerly manager of the plant here of the Grasselli Chemical Co., heads the new company.

NEW HAVEN, CONN.—The American Aluminum Running Board Co. has been incorporated for $250,000 by George Gaudinette and others.

NEW HAVEN, CONN.—The Lockjaw Plier Co. has been incorporated for $50,000 to manufacture wrenches and tools, by Joseph F. Oed and others.

NEW HAVEN, CONN.—The Electro Thermal Machinery Co. plans constructing a 2-story plant for manufacture of automatic electric heating machines used in the treating of metal parts in the process of manufacture.

NEW HAVEN, CONN.—The Hemming-Walsh Mfg. Co. has been incorporated for $50,000 to manufacture and deal in hardware and cutlery by Laura A. Hemming, North Haven, Conn., and others.

SEYMOUR, CONN.—The Seymour Products Co. has been incorporated for $100,000 to manufacture and deal in hardware, tools, etc., by Clayton S. Boies, and others.

SOUTH WINDHAM, CONN.—Smith & Winchester Mfg. Co,, has awarded the Aberthaw Co., Boston, contract for constructing a foundry addition.

WASHINGTON—Joseph McReynolds will construct a 3-story automobile service station at Kansas avenue and Upshur street, northwest.

JACKSONVILLE, FLA.—S. McL. Estes, Inc., has been incorporated for $50,000 to operate a garage and service station with S. McL. Estes, 123 Bayard place, as president and A. W. Weil, 1758 College street, as secretary.

MIAMI, FLA.—Interlox Septic Tank Mfg. Co. has been incorporated for $25,000 by Luke C. Sresovich, president and Charles F. R. Costes, secretary.

MIAMI, FLA.—Airkool Sparkplug Corp. has plans for constructing 2-story plant on North West Twenty-ninth street and Second avenue, with a manufacturing capacity of 10,000 spark plugs daily. J. B. Harper is president, Kichnell & Elliott, Miami, and 245 Fourth avenue, Pittsburgh, are architects.

ATLANTA, GA.—R. E. Suggs, 1516 Healey building, is in the market for a 2000 to 3000-foot air compressor.

CHICAGO—The Atwood-Stewart Vacuum Machine Co. has acquired property at 4527 Ravenswood avenue, where it will enlarge its present operations.

CHICAGO—The Nye Tool & Machine Co. has purchased 67,000 square feet of land at 4047 Fullerton street, where it will erect a 1-story plant to cost about $105,000.

CHICAGO—B. F. Nell & Co., 620 West Pershing road, has been incorporated for $75,000 to manufacture and deal in machinery, appliances, plants, etc., by B. F. Nell Jr., E. J. St. John and William Lister.

CHICAGO—Illinois Auto Service Co., 155 North Clark street, has been incorporated for $20,000 to manufacture and deal in automotive accessories, supplies, etc., by Calvin M. George, Allan T. Gilbert and Leslie F. Kimmell.

CHICAGO—Samuels Tellers Corp., 38 South Dearborn street, has been organized with $200,000 capital to manufacture and deal in refrigerators and refrigeration machinery, cooling machinery, etc., by R. C. Levinson, Jacob L. Samuels and Jacob Teller.

CHICAGO—Transmission Tower Fabricating Co., 1652-53 West Jackson boulevard, has been incorporated with 100 shares no par value stock, to fabricate and deal in transmission towers, etc., by George H. Truman, George R. Hoffman and William B. Berger.

CHICAGO—Autoist Co., 175 West Jackson boulevard, has been incorporated for $10,000 to manufacture and deal in auto spot lights and automobile accessories, power machinery, etc., by Arthur J. Utter, Philip B. Watrus and E. J. Stevens.

CHICAGO—Duplex Equipment Co., 330 West Jackson boulevard, has been incorporated for $10,000 to deal in and manufacture electrical and mechanical apparatus, machinery, etc., by Glenn W. Anderson, George H. Mueller and Marion Grigsby.

CHICAGO—National Self Service Machine Co., 1241 Belmont avenue, has been incorporated for $5000 to manufacture and deal in machinery, hardware, etc., by O. Johnson, William Scherueble, Green Pieratt and F. B. Bodinson.

EVANSTON, ILL.—Oil Burner & Refrigerating Co., 819 Chicago avenue, has been incorporated for $10,000 to manufacture and install oil burning machinery, electric refrigerators, etc., by J. F. Kennedy, Harry R. Kay and Darlyne Kay.

INDIANAPOLIS—National Malleable Castings Co., 546 North Holmes avenue, has plans for constructing plant, 93 x 630 feet, of steel and concrete.

CENTERVILLE, IOWA—J. Rosenbaum & Son want several carloads of used rails, 13 and 16-inch, also a 35 kilovoltampere generator, 220 volt, three phase, alternating current.

LAKE CHARLES, LA.—Stone & Webster Co. interests of Boston have formed the Lake Charles Electric Co., Inc., with a capitalization of $1,000,000. U. A. Bell is president and William N. Sawyer, secretary.

NEW ORLEANS—Sinclair Machine Works has been incorporated with $10,000 capitalization, with H. Lutcher Sinclair, president, 4325 Ullea street, and H. F. Davis, 1459 Moss street, as secretary and treasurer.

BALTIMORE—Carolina Foundry Co. has acquired property in rear of its plant for erection of sand and core bins, handling equipment, etc. Richard B. Sparks, 723 South Carolina street, is interested.

BOSTON—The Boston Structural & Alteration Co. has been incorporated with $40,000 capital by Charles C. Barjsdale, William M. Inkpen and Eleazer Inkpen.

BOSTON—The Norling Automatic Oil Burner Co., has been incorporated for $20,000 to manufacture and deal in oil burners, heaters, etc., by Marcus Morto, Jr., Henry R. Guild and Bennett Sanderson.

BOSTON—Boston Gear Works, Inc., has been formed with $1,200,000 capital by Miles Waumbaugh, Hingham, Mass.; Kenneth B. Pond, Brookline, Mass., and Donald M. Hill, Waban, Mass.

BOSTON—The Universal Vending Machine Co. has been incorporated for $25,000 to manufacture and deal in automatic vending machines by Francis Low Brandt, Claremont, N. H., Samuel Brusket and Dorothy Sessler.

CAMBRIDGE, MASS.—The Ferry Motors Co. has been incorporated for $50,000 by Felix C. Ferry, Harris M. Ramsdell and Harold C. Ramsdell.

DETROIT—Conradson Tool Corp. has been incorporated for $250,000 to manufacture, buy and sell tools, by Ralph W. McKinney, Carlton Plaza hotel, Prentice H. Conradson and B. C. Pinkerton.

DETROIT—The Enterprise Mfg. Co., has been organized with $10,000 capital, to manufacture machines for measuring wire cloth, by Phillip Gabel, 9700 Oakland avenue, Alfred J. Deguise and Bert A. Lambert.

DETROIT—Lincoln Washing Machine Co. has been incorporated for $500,000 and 50,000 shares no par value common stock, to manufacture and sell washing machines, by Joseph Larkins, 6941 Michigan avenue, Walter J. Grant and Arnold F. Merrill.

FENTON, MICH.—The Fenton Machine Tool & Die Co. plans constructing a 1-story plant.

HOUGHTON, MICH.—Calumet & Hecla Consolidated Co. has awarded contracts for constructing nine miles of railroad at cost of about $1,000,000.

JACKSON, MICH.—Morrison Metal Stamping Co., subsidiary of Hayes Wheel Co., plans addition to its punch press shop. H. K. Ferguson Co., Cleveland, is engineer and architect.

KEEWATIN, MINN.—Pickands, Mather & Co., Cleveland, iron ore and vessel interests, have awarded a general contract to R. J. McLeod & Co., Builders Exchange, Duluth, for a 1-story plant at the local mechanical department.

ST. PAUL—Manganiferous Iron Co., Inc., has been incorporated with $300,000 capital to operate iron ore properties, by Francis D. Butler, 1347 Summit avenue, as principal incorporator.

VICKSBURG, MISS—Third Mississippi river commission will erect temporary machine shops, etc., to replace structures recently burned. Major R. P. Howell is in charge. *Noted July 12.*

SPRINGFIELD, MO.—United Iron Works

WABIK METAL

for
Vitreous Enameling

REFRIGERATORS
Stove Door Panels:
Splasher Backs: Broiler Pans:
Table Tops: Signs: and other Flat Work

Wabik Metal Sheets, like all other Mansfield Products, are rolled from our own "Bottom-poured Ingots." They are very low in sulphur.

Other Specialties:

Body Stock; Flat Fender and Hood Stock; Cowl Stock; Radiator Casing Stock; Crown Fender Stock.

METAL FURNITURE SHEETS

PICKELED and ANNEALED ENAMELING STOCK for Kitchen Utensils

MILK CAN STOCK

"Mansfield" Steel is the ultimate in Sheet Bars and in Sheets. It means satisfaction to all of the many users. Constant study of the needs of users, and continuous application of the results of such study, in the way of improved methods in our plants has established a reputation for unsurpassed reliability.

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and
INGOTS

MANSFIELD SHEET & TIN PLATE COMPANY
MANSFIELD, OHIO

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Mansfield Sheet & Tin Plate Co., 1372 Wrigley Bldg., Chicago, Ill.
Mansfield Sheet & Tin Plate Co., 12-237 General Motors Bldg., Detroit, Mich.
The L. D. Rockwell Co., 2002 Union Trust Bldg., Cleveland, O.
Wm. L. Hoffman, 1504 West Venango St., Philadelphia, Pa.
Mr. C. H. Beach, 617 Merchants Bank Bldg., Indianapolis, Ind.
Mr. A. P. Grenier, 640 Endicott Bldg., St. Paul, Minn.
Wm. P. Horn Co., 237 Rialto Bldg., San Francisco, Cal.
Wm. P. Horn Co., 301 Kerchoff Bldg., Los Angeles, Cal.
Wm. P. Horn Co., Dekum Building, Portland, Ore.
Wm. P. Horn Co., 1426 L. C. Smith Bldg., Seattle, Wash.

Warehouse Steel Prices

Quotations at Cents Per Pound at Leading Market Centers

STEEL BARS

Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.11c
Detroit	3.15c
Los Angeles	3.75c
New York	3.24c
Philadelphia	3.10c
Pittsburgh	2.90c
San Francisco	3.75c
Seattle	3.50c
St. Louis	3.15c
St. Paul	3.25c

IRON BARS

Boston	3.265c
Buffalo	3.35c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.15c
New York	3.24c
Philadelphia	3.10c
St. Louis	3.15c

REINFORCING BARS

Boston	3.25c to 3.50c
Buffalo	3.40c
Chicago	2.30c to 2.40c
Cincinnati	3.30c
Cleveland	2.66c to 3.21c
Detroit	3.15c
Los Angeles, C. L.	3.60c
Los Angeles, L. C. L.	4.00c
New York	2.80c
Philadelphia	2.30c
Pittsburgh	2.35c
San Francisco, C. L.	3.65c
San Francisco, L. C. L.	4.00c
Seattle	3.50c

STANDARD STRUCTURAL SHAPES

Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland	3.21c
Detroit	3.25c
Los Angeles	3.85c
New York	3.34c
Philadelphia	3.10c
Pittsburgh	3.00c
San Francisco	3.60c
Seattle	3.60c
St. Louis	3.25c
St. Laul	3.35c

PLATES

Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼-inch and thicker	3.21c
Cleveland, 3/16-inch	3.435c
Detroit	3.25c
Detroit, 3/16-inch	3.45c
Los Angeles	4.00c
New York	3.34c
Philadelphia	3.10c
Philadelphia, 3/16-inch	3.32c
Pittsburgh	3.00c
San Francisco	3.75c
Seattle	3.50c
St. Louis	3.25c
St. Paul	3.35c

NO. 10 BLUE ANNEALED SHEETS

Boston, 3/16-inch	4.515c
Buffalo	4.05c
Chicago	3.80c
Cincinnati	3.90c
Cleveland	3.55c to 3.76c
Detroit	3.95c
Los Angeles	5.00c
New York	3.89c
Philadelphia	3.90c
San Francisco	4.50c
Seattle	4.75c
St. Louis	3.90c
St. Paul	4.05c

NO. 28 BLACK SHEETS

Boston	5.00c
Buffalo	4.75c
Chicago	4.60c
Cincinnati	4.55c
Cleveland	4.45c to 4.55c
Detroit	4.65c
Los Angeles	6.20c
New York	4.60c
Philadelphia	4.95c
San Francisco	5.50c
Seattle	5.75c
St. Louis	4.65c
St. Paul	4.85c

NO. 28 GALVANIZED SHEETS

Boston	6.00c
Buffalo	5.85c
Chicago	5.50c
Cincinnati	5.65c
Cleveland	5.55c to 5.65c
Detroit	5.75c
Los Angeles	7.00c
New York	5.60c
Philadelphia	6.00c
San Francisco	6.20c
Seattle	6.75c
St. Louis	5.65c
St. Paul	5.65c to 5.90c

BANDS

Boston	4.015c
Buffalo	4.05c
Chicago	3.65c
Cincinnati	3.95c
Cleveland	3.86c
Detroit	3.80c
Los Angeles	4.65c
New York	3.99c
Philadelphia	3.85c
Pittsburgh	3.60c
San Francisco	4.25c
Seattle	4.50c
St. Paul	3.90c

HOOPS

Boston	5.50c
Buffalo	4.40c
Chicago	4.15c
Cleveland, 1-inch and wider No. 20 and heavier	3.86c
Cleveland, narrower than 1-inch	4.36c
Detroit	4.30c
New York	4.49c
Philadelphia, ¾-inch and wider, 20 gage and heavier	4.10c
Philadelphia—narrower than ¾-inch	4.60c
Pittsburgh	3.60c
Seattle	5.50c
St. Paul	4.70c

COLD FINISHED STEEL

Boston (rounds)	4.15c
Boston (shapes)	4.65c
Buffalo (rounds)	4.20c
Buffalo (shapes)	4.70c
Chicago (shapes)	4.30c
Chicago (rounds)	3.80c
Cincinnati (rounds)	4.05c
Cincinnati (shapes)	4.55c
Cleveland (rounds)	4.00c
Cleveland (shapes)	4.50c
Detroit (rounds)	4.10c
Detroit (shapes)	4.60c
Los Angeles (rounds)	5.75c
New York (rounds)	4.15c
New York (shapes)	4.65c
Philadelphia (rounds)	4.15c
Philadelphia (shapes)	4.65c
Pittsburgh (rounds)	3.80c
Pittsburgh (sq. hex. and flats)	4.30c
San Francisco (rounds)	5.50c
Seattle (rounds)	5.00c
St. Paul (rounds)	4.05c

WELDED PIPE

Discounts from warehouse, New York City

Standard Steel Pipe
(Subject to Shading)

	Black	Galvanized
¼-⅜-inch butt	—31	+ 2
½-inch butt	—41	—24
¾-inch butt	—46	—32
1/3-inch butt	—48	—34
3½-inch lap	—44	—30
7-8-inch lap	—41	—11
9-10-inch lap	—35	— 8
11-12-inch lap	—34	— 6

Wrought Iron Pipe

	Black	Galvanized
¼-⅜-inch butt	+44	+78
½-inch butt	— 4	+19
¾-inch butt	—11	+ 9
1-1½-inch butt	—14	+ 6
2-inch lap	— 5	+14
3-6-inch lap	—11	+ 6
7-12-inch lap	— 3	+16

was damaged by fire recently with most of loss to its molding department.

ST. LOUIS—St. Louis Pump & Equipment Co., plants at Forest Park boulevard and Spring avenue recently were damaged by fire.

FORT BENTON, MONT.—George D. Vargason and John Muir will open a foundry and iron works here. A plant has been acquired and machinery is being installed.

ELIZABETH, N. J.—New Jersey Copper Co. has been formed with 1000 shares no par value stock to manufacture copper and copper products, by Gleason, McLanahan, Merritt & Ingraham, New York.

JERSEY CITY, N. J.—The plant of the Mesereau Metal Bed Co., has been purchased by Carl Gerdau, importer of raw materials. The building is two stories high, 25 x 200 feet.

NEWARK, N. J.—Keller, O'Neill & Thornton, Inc., 148 Academy street, has been incorporated for $100,000 to manufacture hardware, machinery, etc.

NEWARK, N. J. Kettley-Cough Mfg. & Tool Co. has been organized with $100,000 capital stock to manufacture tools and machinery, by R. A. Kettley.

NEWARK, N. J.—Work will start shortly by the Thatcher Furnace Co., on the reconstruction of the assembly shop and storehouse recently badly damaged by fire.

PATERSON, N. J.—Foundry property of the Gillespie Eden Corp. has been sold. The purchasers, who are foundrymen are understood to be contemplating some alterations, with a view to placing the shop in early operation. The foundry has been operated continuously for several years, until about 12 months ago.

ALBANY, N. Y.—Hynes & Cox Electric Corp., has been incorporated for $50,000 to manufacture machinery, by L. P. Hynes, T. M. Cox and J. C. Watson, with Frost, Watson & Cass, as attorneys.

BROOKLYN, N. Y.—Borco Iron Works, Inc., has been incorporated for $10,000 by Jacob Berman, 661 McDonough street, Sophie Cohen and Louis Cohen, 331 Saratoga avenue.

BROOKLYN, N. Y.—Bright Automatic Machine Co., Inc., has been incorporated for $5000 to manufacture and assemble machinery, etc., by Benjamin May, 34 Norfolk street and Samuel May, 50 Pike street, and Birdie Blumberg, 1545 East Ninteenth street.

FAITHPORT, N. Y.—James M. Finnegan, has been incorporated with 100 shares no par value stock to build machinery, by J. and J. J. and C. Finnegan. L. J. Rice, Rochester, is attorney.

JAMAICA, L. I., N. Y.—Stephan & Danner have been incorporated for $100,000 to do a metalworking business, by A. M. and F. and L. Stephan, with Walter R. Wege Co., 296 Broadway, New York, as attorney.

NEW YORK—The Wolcox Metal Alloy Co., Inc., has been incorporated for $500,000 to deal in metals of all kinds, by Samuel C. Wood.

NEW YORK—Capital Metal Ceiling Co. has been incorporated for $5000 to manufacture metal products, by C. and L. Brownstein and B. Gutwill, with H. B. Mitchell, 5 Beekman street, as attorney.

NEW YORK—Sunray Steel Tool Co. has been incorporated for $50,000 to manufacture tools, by C. and E. Ludwig and C. W. Gruber, with W. Bruner, 220 Broadway, as attorney.

NEW YORK—Chep Steel Wood Co., has been incorporated for $40,000 to manufacture steel products, by H. and M. Fitzpatrick and B. T. Perez, with W. Avery, 105 Court street, Brooklyn, N. Y., as attorney.

NEW YORK—Brooklyn Weighing Machine Co. has been incorporated for $100,000 to manufacture scales and other machinery by J.

Bourne-Fuller Service

includes immediate shipment of all Iron and Steel materials from Cleveland and Cincinnati

Warehouses

If you are not receiving our Stock-list we shall be glad to send it to you regularly upon request.

Upson Works

Open Hearth Steel Bars for special uses. Also a complete line of Bolts and Nuts. Prompt Shipments.

THE BOURNE-FULLER CO.

Iron, Steel
Pig Iron
Coke

CLEVELAND

New York **Chicago**
San Francisco
Cincinnati **Detroit**

Rosenthal, I. Feurstein and S. D. Sugar, with L. D. Scherer, 299 Broadway, as attorney.

NEW YORK—Waxman Machine & Motor Co. has been incorporated for $20,000 to build machinery and motors, by A. and B. Waxman and S. E. Ackerman, with H. Ackerman, 1133 Broadway, as attorney.

NEW YORK—Siemund-Seneua Arc Welder Corp. has been incorporated for $20,000 to manufacture and deal in welding machines and equipment, by W. Hedley, W. C. Steiger and W. J. Metzger, with R. S. Conklin, 34 Pine street, as attorney.

NEW YORK—Griffin Double Tread Wheel Co., 27 William street, has been incorporated for $250,000 to manufacture steel wheels. The incorporators are connected with the Griffin Chilled Steel & Iron Co., that address. *Noted June* 12.

NEW YORK—Tackwell Machine Co. has been formed with $20,000 capital, to manufacture and deal in tacking machines and shipping room supplies, by S. Levine, S. Rose and C. Kleinman, with D. Leavenworth, 256 Broadway, as attorney.

NEW YORK—The Hermetite Chemical Corp., this city, manufacturer of waterproofing compounds, varnishes and lacquers, has taken a 5-year lease with option to purchase on the former plant of the American Nitration Co., Nutley, N. J. The property includes five acres and a 2-story building.

NEW YORK—Work will be started at once by the New York Edison Co., on the erection of a $150,000 electrical distributing station at 119-121 West Twenty-second street. The structural steel required has been placed with the Hedden Iron Construction Co., and amounts to 400 tons.

NEW YORK—Contract for the erection of shops and classification yards for the Southern Railway at Knoxville, Tenn., has been awarded to the Foundation Co., 120 Liberty street. The work under contract covers construction of a 34-stall roundhouse, a machine shop, power plant, and various other structures. The classification yard will require 51 miles of standard gage track and will be about three miles long with a capacity of 29 cars. The work will be completed in about a year. It is understood all equipment purchases will be made by the Southern Railways' offices at Washington.

OGDENSBURG, N. Y.—The Coplan Steel Co., plans constructing a foundry to cost about $75,000.

OLEAN, N. Y.—Electric Light & Power Co. will ask for authority from the Public Service commission to construct a new substation at Portville, N. Y.

UTICA, N. Y.—The Savage Arms Corp. contemplates the expansion of its electric products division for the manufacture of electric refrigerators.

ASHEVILLE, N. C.—Auto Parts & Equipment Co. has been incorporated for $50,000 to manufacture and deal in automobile accessories, by James F. Wishart, O. B. Burroughs, Jr., and T. A. Harrison.

RALEIGH, N. C.—American Duplex Hydrant Co. has been incorporated for $150,000 to manufacture hydrants, castings, etc., by C. B. Atwater, R. V. Dixon and W. C. Maddry, 523 South West street

BAKER, OREG.—Basche Sage Hardware Co. was damaged by fire recently with heavy loss. Hardware, implement and machinery were damaged.

BELLEFONTAINE, O.—Kauffman Metal Products Co. plans increased operating space. A site containing 8½ acres has been purchased in Toledo with several buildings already constructed. The plant will make replacement gears for old automobiles and the new plant gears for new cars. B. F. Skidmore is president and manager.

CINCINNATI—The Cincinnati Steel Casting Co., 1220 Queen City avenue, has plans for constructing 1-story addition. Martin Fisher, Brighton Bank building, is architect.

CLEVELAND—Reliable Stove Co., 1787 East Fortieth street, plans construction of building. H. C. Fritz is general manager.

CLEVELAND—Cleveland Worm & Gear Co. is constructing three buildings including a heavy machine shop. H. K. Ferguson Co. is engineer and architect.

COLUMBUS, O.—Columbus Conveyor Co., West Goodale street, manufacturer of conveying equipment, is in the market for a 24-inch lathe and a medium size drill press.

DAYTON, O.—Duro Pump Co. plans another $175,000 addition to its present plant. One such enlargement now is under construction. A Hunt is manager of the works. The new building will be started next year and will be 4-story, 60 x 200-foot, of reinforced concrete.

DAYTON, O.—Dayton Malleable Iron Co. plans constructing a coal powdering p'ant, costing between $40,000 and $50,000. The building will be a 5-story, 26 x 75-foot structure of brick, concrete and steel. Schenck & Williams are architects. Similar buildings are contemplated for construction at Ironton, O., and Buffalo, N. Y.

LIMA, O.—Auto Eez Mfg. Co., Houston, Tex., manufacturer of shock absorbers, plans location here, according to C. C. Mosher, president of the East Iron Co. Buildings may be constructed in the near future.

LIMA, O.—Ohio Steam Shovel Co. will manufacture an improved type of steam shovel. The company recently was incorporated. John E. Galvin and George S. Vail, incorporators, are connected with the Ohio Steel Foundry. *Noted July* 17.

SANDUSKY, O.—Sandusky Washer Co., plans rebuilding plant demaged by the recent tornado and storm. N. P. Lauritzen is manager.

SANDUSKY, O.—The Sandusky, Tool Co., plans reconstructing its plant damaged recently by storm and tornado. William L. Allondorf is president. The hoe department was wrecked, main buildings damaged, etc.

SPRINGFIELD, O.—Increased productive capacity is expected by the Tridgely Trimmer Co., manufacturer of wire brushes for railroads, following the endorsement of its product by operating heads at the recent railroad executives meeting at Atlantic City,

TOLEDO, O.—The Kasle Iron & Metal Co., 1102 Lagrange street, is in the market for an all steel shear to cut 5-inch capacity.

BLOSSBURG, PA.—J. P. Ward Foundry is inquiring for foundry equipment for manufacture of pipe fittings. J. E. Willis is purchasing agent.

COLWYN, PA.—Contract for the erection of a 2-story power house at its plant here has been awarded by the G. Woolford Wood Tank Mfg. Co. to Barclay White & Co., 1713 Sansom street, Philadelphia.

DANVILLE, PA.—Edward W. Peter, 103 Lower Mulberry street, wants to buy a 2000-pound double leg steam forging hammer.

PHILADELPHIA—Contract for the erection of a $50,000 plant addition has been awarded by the Hess-Bright Mfg. Co., Front and Erie streets, manufacturer of ball bearings, to John Homan, Eighteenth and Cherry streets. The proposed structure will be 1-story high, 35 x 142 feet.

PITTSBURGH—Pneumatic Machinery Co., 507 Liberty avenue, wants to buy air compressors.

Business in Canada

VANCOUVER, B. C.—Knapp Metal Barrel Co., San Francisco, is reported as planning the establishment of a manufacturing plant here, for the production of metal barrels, etc.

VANCOUVER, B. C.—Vancouver Terminal Grain Spillers has received permit for constructing grain elevator. Handling equipment and plant will cost about $2,500,000.

VANCOUVER, B. C.—The city council has awarded general contract to the Dominion Construction Co., for the erection of a machine shop at the Gamble street civic yards to cost $15,500. Machinery and tools have still to be purchased.

VANCOUVER, B. C.—The Vancouver Gas Co., has awarded the general contract to the West Gas Improvement Co., and excavation work has been started in connection with $300,000 gas plant and bunkers to be erected here.

WINNIPEG, MAN.—C. N. Heuber, Kitchener, Ont., manufacturer of furnaces, heating appliances, etc., is completing arrangements for the establishing of a manufacturing plant here.

WINNIPEG, MAN.—Siemens Bros. of Canada, Ltd., has been incorporated for $100,000 to manufacture telephones, radiographs and radio receiving stations by H. A. Bergman, Brian O'Day and David R. McCann.

WINNIPEG, MAN.—Russell Grader Mfg. Co. of Canada, Ltd., has been incorporated to manufacture machinery and implements, with $50,000 capital, by Edgar G. Powell, Travers Sweatman and Albert Olson.

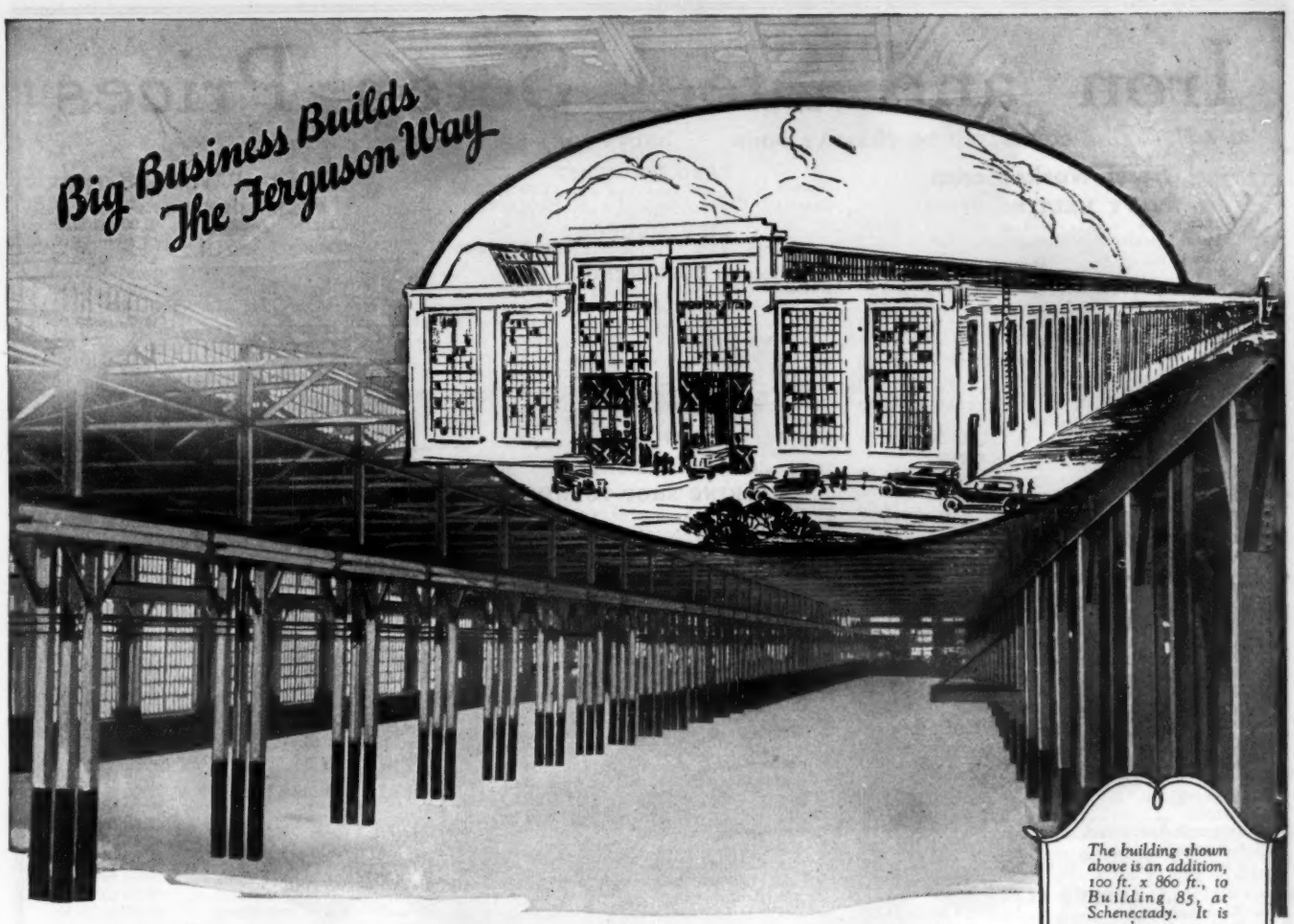
GALT, ONT.—The Galt Machine & Screw Co., has purchased assets and patent rights of the Touring Car & Equipment Co., here and will manufacture automobile tops for the Canadian trade.

GALT, ONT.—The Pilot Mfg. Co., in which James G. Gairdner is interested, has purchased the land, building and equipment of the Perfect Machinery Co. here and will remodel and install additional machinery for the manufacture of milking machines, cream separators, dairy supplies, etc. The company will also manufacture all-aluminum electric washing machines in the future.

HAMILTON, ONT.—The Brennan Paving Co., is in the market for a 35 or 40 horsepower locomotive type boiler.

HAMILTON, ONT.—The James Moncur Electric Co., Ltd., has been incorporated to manufacture and deal in electric fixtures, power plant equipment, machinery, tools, etc., with

(*Continued on Page* 250)



The building shown above is an addition, 100 ft. x 860 ft., to Building 85, at Schenectady. It is set on heavy concrete piles and carries 10 ton crane runways throughout the entire length of the building. In use for wire and cable manufacture.

The General Electric Company Buys Ferguson Factories

The world's largest electrical manufacturer occupies a commanding position as a judge of industrial buildings. Not only does General Electric occupy over 25,000,000 square feet of factory floor space in America, but its engineers are constantly developing new plant designs for use by their own customers' companies.

As General Electric's factories have grown larger and more numerous, their standards of design and construction have improved until their requirements are now among the most rigid in our country.

It is significant that The H. K. Ferguson Company has built eight factory buildings for The General Electric Company in the last three years. No more convincing proof could be given of the fact that GE's requirements in design, delivery, price and quality of workmanship are being met.

If you are contemplating the purchase of more floor space, *talk with Ferguson first.* The Ferguson proposition will focus on *your* building the plant development sense acquired through the erection of some of America's largest and finest industrial buildings. You will save time. You will save money.

Come to one of our offices, telephone, telegraph—or write for Booklet F.

Cleveland Office: 4900 Euclid Bldg. Telephone, Randolph 6854

THE H. K. FERGUSON COMPANY

New York Office: 25 W. 43rd St. Telephone, Vanderbilt 4526

Executives!

No officer or director of a corporation can truthfully say that he has properly served the interests of his company, in connection with a substantial building program, unless he has given careful consideration to the H. K. Ferguson Company's proposal for the designing, construction and equipping of his plant.

Ferguson
GUARANTEED BUILDINGS

Iron and Steel Scrap Prices

CORRECTED TO TUESDAY NOON GROSS TONS DELIVERED TO CONSUMER

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	11.00 to 12.00
Boston (dealers)	11.00 to 11.75
Buffalo	15.50 to 16.00
Chicago	15.25 to 15.75
Cleveland	15.75 to 16.25
Cincinnati	13.00 to 13.50
Detroit (dealers)	14.00 to 14.50
Eastern Pennsylvania	15.00 to 16.00
New York (dealers)	11.50 to 12.00
Pittsburgh	18.00
St. Louis	14.00 to 14.50
Valleys	18.00 to 18.50
No. 1 railroad steel New York (dealers)	11.50 to 12.00

COMPRESSED SHEETS

Buffalo	14.00 to 14.50
Chicago	12.00 to 12.50
Cleveland	13.50 to 14.00
Detroit (dealers)	11.50 to 12.00
Pittsburgh	16.00 to 16.50
Valleys	15.50 to 16.00

BUNDLED SHEETS

Buffalo	8.50 to 9.00
Cincinnati	9.00 to 9.50
Cleveland	12.00 to 12.25
Detroit	9.50 to 10.00
Eastern Pennsylvania	13.00 to 13.50
Pittsburgh	14.50 to 15.00
St. Louis	8.50 to 9.00
Valleys	13.50 to 14.00

SHEET CLIPPINGS, LOOSE

Chicago	8.50 to 9.00
Detroit	8.50 to 9.00

STEEL RAILS, SHORT

Birmingham	11.00 to 12.00
Detroit	15.00 to 15.50
Chicago	17.00 to 17.50
Cincinnati	16.00 to 17.00
Cleveland (over 6 ft.)	15.00 to 15.50
St. Louis	17.50 to 18.00

STOVE PLATE

Birmingham	14.00 to 15.00
Boston (consumers)	15.00 to 15.50
Buffalo	15.50 to 16.00
Chicago	16.00 to 16.50
Cincinnati (net tons)	10.00 to 10.50
Cleveland	13.25 to 13.50
Detroit (net tons) dealers	13.50 to 14.00
Eastern Pennsylvania	14.50 to 15.00
New York (dealers)	11.50 to 12.00
Pittsburgh	14.00 to 14.50
St. Louis	15.00 to 15.50

LOW PHOSPHORUS

Buffalo	17.50 to 18.00
Cincinnati	14.00 to 14.50
Eastern Pennsylvania	18.50 to 20.00
Pitts. billet and bloom crops	22.00 to 22.50

SHOVELING STEEL

Chicago	15.00 to 15.50
Pittsburgh	14.00 to 14.50
St. Louis	13.75 t o14.25

KNUCKLES, COUPLERS, SPRINGS

Chicago	18.00 to 18.50
Eastern Pennsylvania	18.00 to 19.00
Pittsburgh	20.00 to 20.50
St. Louis	18.00 to 18.50

FROGS, SWITCHES, GUARDS

Chicago	15.50 to 16.00
Eastern Pennsylvania	15.00 to 15.50
St. Louis	15.50 to 16.00

BOILER PLATE, CUT

St. Louis	9.50 to 10.00

ANGLE BARS—STEEL

Chicago	16.00 to 16.50
St. Louis	16.00 to 16.50

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	10.00 to 11.00
Boston (dealers)	13.50 to 14.00
Buffalo	12.50 to 13.00
Cleveland, No. 1	12.50 to 13.00
Chicago, No. 1	15.00 to 15.50
Chicago, No. 2	15.25 to 15.75
Cincinnati, No. 1	11.00 to 11.50
Detroit, No. 2	14.00 to 14.50
Eastern Pennsylvania	18.00 to 18.50
New York, No. 1 (dealers)	15.00 to 15.50
Pittsburgh, No. 1	14.50 to 15.00
Pittsburgh, No. 2	18.00
St. Louis, No. 1	12.50 to 13.00
St. Louis, No. 2	14.25 to 14.75

WROUGHT PIPE

Boston (dealers)	10.00 to 10.50
Buffalo	11.00 to 12.00
Eastern Pennsylvania	15.50 to 16.00
New York (dealers)	11.25 to 11.75

YARD WROUGHT

Boston	12.00 to 12.50
Eastern Pennsylvania	16.00 to 17.00

CITY WROUGHT

New York, long	13.50 to 14.00

BUSHELING

Buffalo	13.00 to 13.50
Chicago, No. 1	12.50 to 13.00
Chicago, No. 2	8.25 to 8.75
Cincinnati, No. 1	9.00 to 9.50
Cleveland, No. 1	13.75 to 14.00
Cleveland, No. 2	12.00 to 12.50
Detroit, No. 1	11.50 to 12.00
Detroit, No. 2 (new)	10.50 to 11.00
Detroit, No. 2 (old)	9.00 to 9.50
Eastern Pennsylvania	14.00 to 14.50
Pittsburgh, No. 1	13.50 to 14.00
St. Louis, No. 1	12.50 to 13.00

MACHINE SHOP TURNINGS

Birmingham	6.00 to 7.00
Boston (dealers)	7.50 to 8.00
Buffalo	11.00 to 11.50
Chicago	8.50 to 9.00
Cincinnati	9.50 to 10.00
Cleveland	13.25 to 13.50
Detroit (dealers)	10.50 to 11.00
Eastern Pennsylvania	12.50 to 13.00
New York (dealers)	8.50 to 9.00
Pittsburgh	14.00 to 14.50
St. Louis	7.00 to 7.50
Valleys	12.50 to 13.00

CAST IRON BORINGS

Birmingham (chemical)	15.00 to 16.00
Birmingham (plain)	8.00 to 9.00
Boston (chemical)	9.00 to 9.50
Boston (dealers)	8.00 to 8.50
Buffalo	11.00 to 11.50
Chicago	11.00 to 11.50
Cincinnati	10.00 to 10.50
Cleveland	14.00 to 14.25
Detroit (dealers)	11.50 to 12.00
Eastern Pennsylvania (chem.)	14.50 to 15.00
Eastern Pennsylvania	13.00 to 13.50
New York (dealers)	8.50 to 9.00
Pittsburgh	14.00 to 14.50
St. Louis	9.25 to 9.75
Valleys	14.50 to 14.75

MIXED BORINGS AND TURNINGS
For blast furnace use

Boston (dealers)	6.50 to 7.00
Cleveland	14.00 to 14.25
Detroit (dealers)	11.00 to 11.50
Eastern Pennsylvania	11.00 to 11.50
New York (dealers)	7.00 to 7.50

IRON AXLES

Birmingham	19.00 to 19.50
Boston (consumers)	31.00 to 32.00
Buffalo	25.00
Chicago	26.50 to 27.00
Cincinnati	19.50 to 20.00
St. Louis	25.00 to 25.50
New York (dealers)	23.00 to 24.00
Eastern Pennsylvania	21.50 to 22.50

IRON RAILS

Buffalo	19.00 to 20.00
Chicago	17.50 to 18.00
Cincinnati	12.50 to 13.00
St. Louis	10.50 to 11.00

PIPES AND FLUES

Chicago	10.00 to 10.50
Cincinnati	9.00 to 9.50
Cleveland	10.50 to 11.00
St. Louis	8.50 to 9.00

RAILROAD GRATE BARS

Buffalo	14.50 to 15.00
Chicago	16.00 to 16.50
Cleveland	13.75 to 14.00
Eastern Pennsylvania	14.50 to 15.00
New York (dealers)	12.50 to 13.00
St. Louis	15.00 to 15.50

FORGE FLASHINGS

Boston (dealers)	8.50 to 8.75
Buffalo	13.00 to 13.50
Chicago	10.50 to 11.00
Cleveland (under 10 in.)	13.50 to 14.00
Cleveland (over 10 in.)	13.50 to 14.00
Detroit (dealers)	10.00 to 10.50

FORGE SCRAP

Boston (dealers)	8.50 to 8.75
Chicago	18.00 to 18.50
Eastern Pennsylvania	13.25 to 13.75

ARCH BARS AND TRANSOMS

Chicago	19.00 to 19.50
St. Louis	18.50 to 19.00

ANGLE BARS—IRON

Chicago	17.50 to 18.00
St. Louis	17.25 to 17.75

Iron and Steel Works Scrap

AXLE TURNINGS

Boston (dealers)	8.00 to 8.50
Buffalo	14.50 to 15.00
Chicago	12.00 to 12.50
Cleveland	14.25 to 14.50
Eastern Pennsylvania	13.00 to 13.50
Pittsburgh	16.00 to 16.50
St. Louis	11.50 to 12.00

STEEL CAR AXLES

Birmingham	17.00 to 18.00
Boston (consumers)	19.00 to 20.00
Buffalo	19.00 to 20.00
Chicago	19.50 to 20.00
Cleveland	17.75 to 18.25
Eastern Pennsylvania	21.00 to 22.00
Pittsburgh	20.50 to 21.00
St. Louis	19.00 to 19.50

SHAFTING

Boston (consumers)	19.00 to 20.00
Chicago	19.50 to 20.00
Eastern Pennsylvania	22.00 to 24.00
New York (dealers)	17.00 to 17.50
St. Louis	19.00 to 19.50

Iron Foundry Scrap

CAR WHEELS

Birmingham, tram car	15.00 to 16.00
Birmingham, iron	14.00 to 15.00
Boston (consumers)	19.00 to 19.50
Buffalo	17.50 to 18.00
Chicago, iron	16.50 to 17.00
Cincinnati	11.50 to 12.00
Eastern Pennsylvania	17.50 to 18.00
New York iron (dealers)	14.50 to 15.00
Pittsburgh, iron	17.00 to 17.50
Pittsburgh, steel	20.00 to 20.50
St. Louis, iron	16.00 to 16.50

NO. 1 CAST SCRAP

Birmingham, cupola	15.00 to 16.00
Boston (consumers)	19.50 to 20.00
Buffalo	16.50 to 17.00
Chicago, No. 1 machinery	19.00 to 19.50
Cincinnati No. 1 machinery cupola (net tons)	17.00 to 17.50
Cleveland, cupola	18.50 to 18.75
Detroit (net tons) (dealers)	16.00 to 16.50
Eastern Pennsylvania, cupola	17.00 to 18.00
New York, cupola (dealers)	14.00 to 14.50
Pittsburgh, cupola	18.00 to 18.50
San Francisco	20.00
Seattle	18.50 to 20.00
St. Louis railroad	18.50 to 19.00
St. Louis, agricultural	18.50 to 19.00
Valleys	19.50 to 20.00

HEAVY CAST

Boston (consumers)	15.50 to 16.00
Buffalo (breakable)	15.50 to 16.00
Cleveland	12.50 to 13.00
Detroit (automobile) (net ton)	16.50 to 17.00
Eastern Pennsylvania	16.00
New York (dealers)	13.00 to 13.50
Pittsburgh	15.50 to 16.00

MALLEABLE

Boston (railroad)	18.00 to 18.50
Buffalo	17.50 to 18.00
Chicago, railroad	17.00 to 17.50
Chicago, agricultural	16.50 to 17.00
Cincinnati, agricultural	12.00 to 12.50
Cincinnati, railroad	14.50 to 15.00
Cleveland, agricultural	16.50 to 16.75
Cleveland, railroad	17.50 to 17.75
Detroit (dealers)	16.50 to 17.50
Eastern Pennsylvania, railroad	15.50 to 16.50
Pittsburgh railroad	16.00 to 16.50
St. Louis, agricultural	13.50 to 14.00
St. Louis, railroad	14.00 to 14.50

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

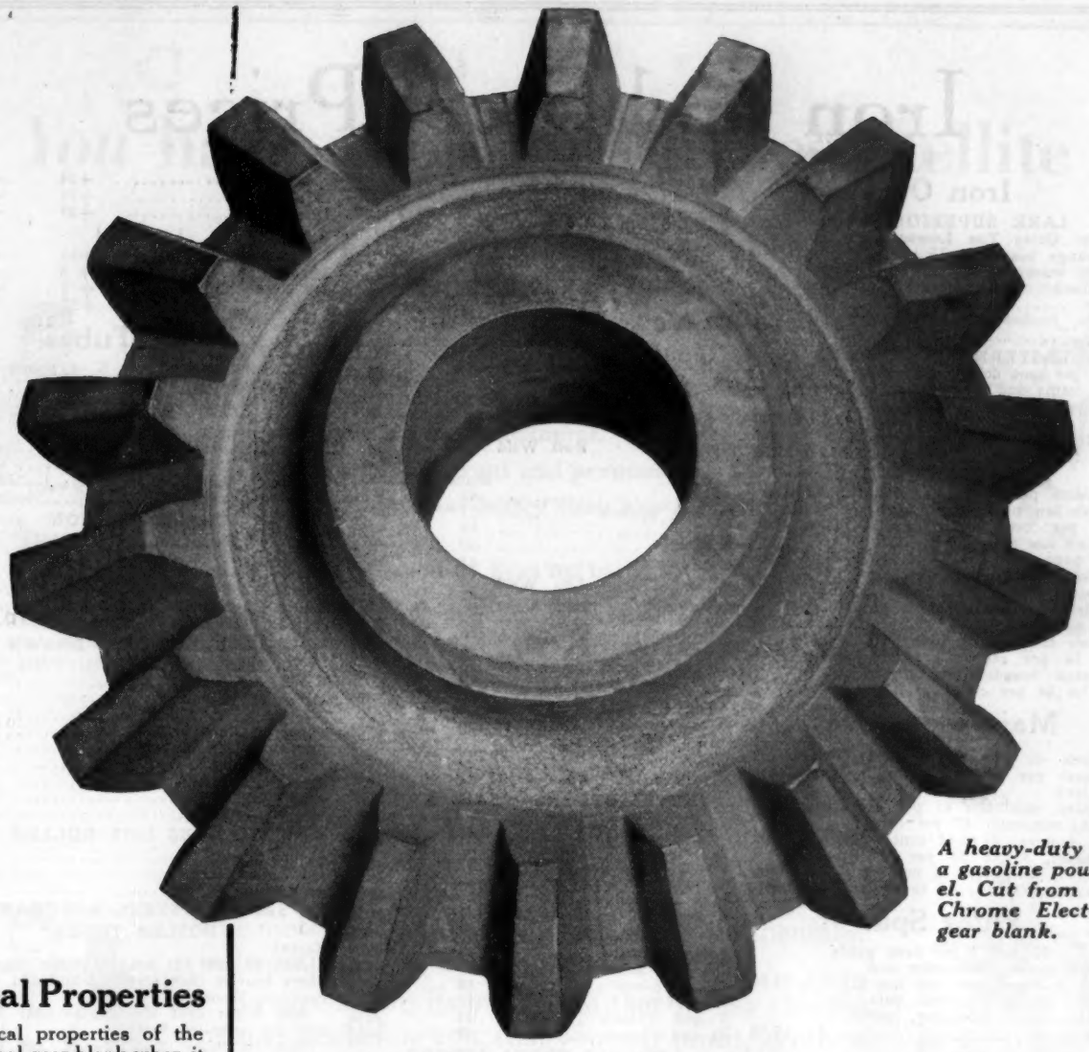
Birmingham, tram car	14.50 to 15.00
Boston (dealers)	12.00 to 13.00
Chicago	16.00 to 16.50
Cleveland	16.00 to 16.25
Detroit	14.00 to 14.50
Eastern Pennsylvania	17.50 to 18.00
New York (dealers)	14.00 to 14.50
Pittsburgh district	18.00 to 18.50
St. Louis	16.00 to 16.50

LOCOMOTIVE TIRES

Chicago	18.00 to 18.50
St. Louis	15.00 to 15.50

LOW PHOSPHORUS PUNCHINGS

Chicago	16.00 to 16.50
Eastern Pennsylvania	18.00 to 19.00
Pittsburgh	20.50 to 21.00



A heavy-duty gear for a gasoline power shovel. Cut from a Sivyer Chrome Electric cast gear blank.

Physical Properties

The physical properties of the Chrome Steel gear blank when it leaves the Sivyer foundry, are as follows:

Tensile strength.....95,000 lbs.
Yield Point.....55,000 lbs.
Elongation in 2".....18%
Reduction in Area.....25%

To further increase these properties the cut gear is subjected, by the manufacturer using it, to a treatment, consisting of heating and quenching in oil. After this treatment the metal shows a scleroscope hardness of 50 to 60 and is so tough that the possibility of teeth shearing in service is virtually eliminated.

Not only do the Sivyer blanks insure a better gear to the customer, but they effect an actual saving to the manufacturer. The cast blank cuts down expensive machining and waste metal. It, also, reduces inventory costs, for the Sivyer blanks can be made up in large or small quantities, on short notice.

Tool Steel Toughness At a Decided Saving

SIVYER Chrome Electric Steel gives the above gear a dense close-grained toughness that can be rivaled only by the highest grade tool steel. The Sivyer gear-blank is cast to the approximate size and shape of the finished gear and the shaft hole is cored. This saves many of the expensive drilling and machining operations that were necessary when forged blanks were used.

SIVYER STEEL

SIVYER STEEL CASTING COMPANY, MILWAUKEE

Iron and Steel Prices

Iron Ore

LAKE SUPERIOR ORES
Per Gross Ton Lower Lake Ports

Old range bessemer, 55 per cent iron. $5.65
Mesabi bessemer, 55 per cent iron.... 5.40
Old Range nonbessemer, 51½ per cent iron 4.90
Mesabi nonbessemer, 51½ per cent iron 4.75

EASTERN LOCAL ORES
Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic 53 to 63 per cent ..... 9.00 to 10.00
Copper free low phosphorus 53 to 65 per cent ..... 12.50 to 13.50

FOREIGN IRON ORE
Cents per unt, c.i.f. Atlantic ports

Spanish low phosphorus, 52 to 54 per cent ..... 9.00 to 9.50
Algerian low phosphorus, 52 to 54 per cent ..... 10.00 to 10.50
Swedish and Norwegian low phosphorus, 68 per cent.. 11.00 to 11.50
Swedish foundry or basic, 66 to 68 per cent ..... 9.00 to 10.00
Spanish foundry or basic, 50 to 54 per cent ..... 8.00 to 9.00
Alegerian foundry and basic, 50 to 54 per cent ..... 8.00 to 9.00

Manganese Ore

Prices do not include duty at rate 1 per cent per pound of metallic manganese contained.

Brazilian, minimum 47 per cent....nominal
Indian, minimum 47 per cent.....
....nominal 41 to 42 cents c.i.f. tidewater
Caucasian, 53 to 55 per cent.....
.....Ordinary, 43 cents c.i.f. tidewater
.....Washed, 46 cents c.i.f. tidewater

Fluor Spar

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton $19.00 to 23.50
Washed gravel, imported duty paid eastern tidewater, per net ton..... 19.00

Rivets

Structural rivets, C. L. Pitts.. 2.45c to 2.50c
Structural rivets L. C. L. Pittsburgh ..... 2.65c to 2.75c
Rivets, 7/16-in. and smaller.....
.....70 and 10 off to 70, 10 and 10 off

Nuts and Bolts

(Up to 1¾ and 1½ inches inclusive)

Hot pressed square or hexagon blank .....$5.00 to 4.75 off list
Hot pressed square or hexagon tapped .....$5.00 to 4.75 off list
Cold punched square or hexagon blank .....$4.50 to 4.25 off list
Cold punched square or hexagon.... .....$4.50 to 4.25 off list
Cold punched semifinished hexagon nuts ⅝-inch and larger .....80 and 10 off
Cold punched semifinished hexagon nuts 9/16-inch and smaller ....80, 10 and 5 off
Price f.o.b. Pittsburgh, packages of 50.

CARRIAGE BOLTS
(¾ x 6 inches, smaller and shorter)

Rolled thread .....60 and 20 off
Cut thread .....60 and 10 off
Larger and longer .....60 and 10 off

MACHINE BOLTS
(¾ x 4 inches, hot pressed nuts)

Rolled thread .....60, 20 and 10 off
Cut thread .....60 and 20 off
Larger and longer .....60 and 20 off
(All sizes cold punched nuts)
Cut thread .....50,10 and 10 off
Lag screws .....65 and 20 off
Plow bolts Nos. 1, 2 and 3 heads.. .....50 and 10 off
4 to 10 heads.....50-10 + 20 off
Flat and round head stove bolts..... .....80,10 and 5 off
Other stove bolts .....80, 10 and 5 off
Tap bolts .....30 off
Bolt ends with hot pressed nuts..... .....60 and 20 off
Bolt ends with cold punched nuts.... .....50, 10 and 10 off
Blank bolts .....60 and 20 off
Rough stud bolts with nuts (250 pieces or more of a size)..... .....45, 10 and 5 off

Washers

Wrought .....$5.75 to $6.10 off
Lock washers .....80 per cent off

Steel Pipe

(Effective April 19, 1923)

Pittsburgh basing discounts, jobbers' carloads.

	Black	Galvanized
Butt Weld		
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	56	42½
¾-inch	60	48½
1 to 3-inch	62	50½
Lap Weld		
2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½
REAMED AND DRIFTED		
Butt Weld		
1 to 3-inch	60	48½
Lap Weld		
2-inch	53	41½
2½ to 6-inch	57	45½
EXTRA STRONG—PLAIN ENDS		
Butt Weld		
⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½
Lap Weld		
2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	43	31½
DOUBLE EXTRA STRONG		
Butt Weld		
½-inch	42	32½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½
Lap Weld		
2-inch	41	32½
2½ to 4-inch	43	34½
4½ to 6-inch	42	33½
7 to 8-inch	38	25½

Wrought Iron Pipe

(Effective Jan. 23, 1923)

Pittsburgh basing discounts, jobbers' carloads

THREADS AND COUPLINGS		
Butt Weld		
¼ and ⅜-inch	+11	+39
½-inch	22	2
¾-inch	28	11
1 to 1½-inch	30	13
Lap Weld		
1¾ and 1½-inch	Upon application	
2-inch	23	7
2½ to 6-inch	26	11
3 to 6-inch	28	13
7 to 12-inch	26	11
PLUGGED AND REAMED		
Two points less than above		
EXTRA STRONG, PLAIN ENLS		
Butt Weld		
¼ and ⅜-inch	+19	+54
½-inch	21	7
¾-inch	28	12
1 to 1½-inch	30	14
Lap Weld		
2-inch	23	9
2½ to 4-inch	29	15
4½ to 6-inch	28	14
7 to 8-inch	21	7
9 to 12-inch	16	2
DOUBLE EXTRA STRONG		
Butt Weld		
½-inch	+47½	+59½
¾-inch	+28	+40
1-inch	+34	+46
1¼-inch	+28	+40
1½-inch	+27	+39
Lap Weld		
2 and 2½ inches	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	

Boiler Tubes

L. C. L. discounts. C. L. 4 points larger

STEEL (Lap Welded)
(Effective April 19, 1923)

2 and 2¼-inch	23 off
2½ and 2¾-inch	33 off
3-inch	36 off
3¼ to 3¾-inch	38½ off
4 to 13-inch	42 off

CHARCOAL IRON
(Effective April 12, 1923)

1½-inch	+22
1¾-inch	+12
2 and 2¼-inch	+ 2
2½ to 3-inch	3
3¼ to 4½-inch	5

SEAMLESS COLD DRAWN
(Effective April 19, 1923)

1-inch	51 off
1¼ and 1½-inch	43 off
1¾-inch	27 off
2 and 2¼-inch	18 off
2½ and 2¾-inch	28 off
3 and 3¼-inch	32 off
3½ and 3¾-inch	33 off
4-inch	37 off
4½ and 5-inch	29 off

SEAMLES HOT ROLLED

3 and 3¼-inch	34 off
3½ and 3¾-inch	35 off
4-inch	39 off

SEAMLES STEEL MERCHANT BOILER TUBES

Extras:

Add $8 per net ton for more than four gages heavier than standard and add 10 per cent to theoretical weight.

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts

Carbon, 0.10 to 0.20 per cent..... 83 off
Carbon, 0.30 to 0.40 per cent..... 81 off
Carbon 0.40 to 0.50 per cent.....net price
Plus differentials and extras for cutting.

SEAMLES STEEL LOCOMOTIVE AND SUPERHEATER TUBES
(Effective April 19, 1923)

Outside diameter	Net prices per foot f.o.b. Pittsburgh Gage	Price
2-inch	12-gage	15c
2-inch	12-gage	15c
2-inch	11-gage	16c
2-inch	10-gage	17c
2¼-inch	12-gage	17c
2¼-inch	11-gage	18c
2¼-inch	10-gage	20c
3-inch	7-gage	35c
1½-inch	9-gage	15c
5⅜-inch	9-gage	55c
5½-inch	9-gage	57c

Plus usual extras for forming and for long lengths.

*Published discounts are subject to considerable shading, in some cases as much as three extra 5 per cents.

Hot Rolled Alloy Steels

Prices per pound, Pittsburgh

S. A. E. Series—	
2300 (3½ per cent nickel)...	5.00c
3100 (nickel chromium).....	4.00c
6100 (chrome vanadium)	4.75c
6100 (chrome vanadium spring)	4.50c
9250 (Silico manganese spring)	4.00c to 4.25c

You have a job for Haynes Stellite

THESE ARE the qualities of HAYNES STELLITE that make it indispensable to hundreds of manufacturers in the making of a range of products all the way from automobiles to ice-cream:

It is an intrinsically hard cast metal.

It requires no heat treatment.

Its temper is inherent and permanent.

It resists abrasion better than any other known metal.

It is not affected by heat up to 1500° F.

It is tougher at red heat than when it is cold.

It cannot rust or be corroded by any ordinary chemical or acid.

It is non-magnetic and does not adhere to other metals.

It takes a high, silver-white polish and retains it.

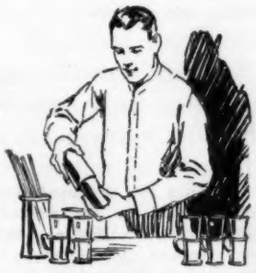
Haynes Stellite resists wear. Haynes Stellite gages outlast steel 400% to 600%. Lathe and grinder centers show equal increases in length of life.

Haynes Stellite does not adhere to other metals. It is used in burnishing gold and silver-leafed band instruments.

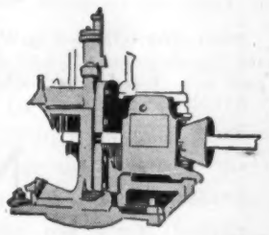
HAYNES STELLITE lathe and milling tools have proved themselves 30% to 100% more efficient in machining operations than tools of any other cutting metal. They have made themselves indispensable in large plants all over the world.

So diverse are its other uses that we lay this list of qualities before you, that you may profit, as others have, by your ingenuity in applying HAYNES STELLITE to specific operations.

Your letter to the nearest district sales office will bring you a prompt answer to any questions you may ask.



Haynes Stellite valves, used in the manufacture of ice-cream in quantity, resist the corrosive action of lactic acid and the erosion of terrific pressure.



Haynes Stellite, working under a continuous heat of 1400° F in a hot billet scraper, meets a test no other metal can pass.

Haynes Stellite can be deposited on other metals where a coating is sufficient. Cheaper dies with longer life are one such application.

HAYNES STELLITE

HAYNES STELLITE COMPANY

District Sales Offices

Carbide & Carbon Building, 30 East 42d Street, New York

People's Gas Building, Chicago — 4503 Euclid Avenue, Cleveland — General Motors Building, Detroit

Business in Canada

(*Continued from Page* 244)

$100,000 capital by James W. Moncur, Thomas H. Crerar and Walter G. Brown.

OTTAWA, ONT.—The Ottawa Electric Co., has started work on the erection of a power plant here to cost $100,000.

SIMPSON TOWNSHIP, ONT.—The Southern Canada Power Co., Montreal, Que., has had plans prepared for construction of concrete dam, 1000 feet long; power plant 25 x 106 feet, to contain 6 turbine generator units, to generate 20,000 horsepower; also two earth fill dams, 2200 feet, to be constructed here. G. R. Rollegen, Montreal, is company engineer.

STRATFORD, ONT.—J. R. MacDonald, manufacturer of threshing machines, etc., is in the market for machinery and equipment for $50,000 plant.

TILLSONBURG, ONT.—Coyles Products, Ltd., has been incorporated for $40,000 capital, to manufacture milking machines, automobile heaters, etc., by Aubrey J. Coyle, Charles D. Coyle and Richard L. Smith.

TORONTO, ONT.—The Canada Laundry Machinery Co., Sterling Road, will start work in the early future on addition to factory to cost $20,000.

TORONTO, ONT.—The Dominion Kewanee Boiler Co., Ltd., has been incorporated with $100,000 capital, by James Aitchison, Collamer C. Calvin and George H. Sedgewick.

TORONTO, ONT.—The Walsh Electric Co., 465 Church street, will build an addition to its plant here. Bids for construction work are being received by B. Richardson, 632 Church street, architect.

TORONTO, ONT.—The factory of the Conboy Carriage Co., on the Don Road, was damaged badly by fire July 10. The company manufactured automobile tops, accessories, etc.

TORONTO, ONT.—A. H. Reid & Son, Ltd., has been incorporated to manufacture sanitary fixtures and plumber's supplies, with $40,000 capital, by John E. Corcoran, Reginald E. Nourse and David C. Howard.

TORONTO, ONT.—Duplex Bronze Weatherstrip Co., Ltd., has been incorporated to manufacture weatherstrips, screens, curtain rods, etc., with $40,000 capital, by Rupert E. Edwards, Amy S. Edwards and Francis Walkingshaw.

TORONTO, ONT.—Potts' Pattern & Machine Co., Ltd., has been incorporated to acquire and take over the plant and business of the Potts' Pattern Works, with $40,000 capital stock; by Robert E. Grass, Armand T. Whitehead, John A. Cattanach and others.

WHITBY, ONT.—The Protex Co., Ltd., manufacturer of waterproofing has obtained temporary premises and shortly will erect a permanent plant.

CHATEAUGUAY, QUE.—J. A. McCracken is in the market for bench lathe and other tools and equipment for automobile repair plant.

HEMMING'S FALLS, QUE.—The Southern Canada Power Co., Montreal, Que., has started work on $1,500,000 power development plant here. The Foundation Co., Ltd., Montreal, has general contract.

LA BOUCHETTE, QUE.—La Cie Electrique La Bouchette Ltd., will start work immediately on electric development plant here to cost $35,000.

MONTREAL, QUE.—Beaudry & Paquin, Boulevard Gouin, is inquiring for a drill.

MONTREAL, QUE.—Metals & Chemical Ltd., has been incorporated with $300,000 capital stock by Douglas L. Ross, Leonard V. Sutton and Edith M. Carruthers, to manufacture metal and chemical products.

MONTREAL, QUE.—The National Lighting Co., of Canada, Ltd., has been incorporated to manufacture and deal in dynamos, accumulators, electrical machinery and supplies, etc., with $49,900 capital, by Fabien L. Giroux, Alfred Pache, Charles A. Bertrand and others.

PORT CHATEAU, QUE.—A. Blanchard is in the market for a lathe, drill press and emery grinder.

RICHELIEU, QUE.—A. Desroches is in the market for equipment for automobile repair plant including small lathe, bench tools, etc.

SOREL, QUE.—Deguire & Frere, 11 Prince street, will purchase a lathe and drill press.

VALLEYFIELD, QUE.—I. Queeneville, St. Lawrence street, will purchase machinery and tools for machine shop.

WATERLOO, QUE.—J. M. Smith, Foster Square, is asking for drill press, air compressor and emery grinder.

WEST MONTREAL, QUE.—The Builders' Iron Works, F. C. E. Burnett, 8 Westminster avenue, Montreal, engineer, is asking for machinery and tools for iron foundry. *Noted July* 10.

SASKATOON, SASK.—The plant of the Desjardins Co., manufacturer of agricultural implements, etc., was damaged by fire July 9, with heavy loss to building and machinery.

New Trade Publications

PLANT CONSTRUCTION—The Watson Co., architect and engineer, Cleveland, has issued a booklet showing various office and manufacturing structures planned and erected for a number of clients and uses.

DRAFTING EQUIPMENT—A catalog of drafting room furniture has been issued by the C. F. Pease Co., Chicago, covering complete equipment for such use. Furniture, drawing accessories and blue printing equipment are included.

BEARING METAL—In 96 pages, pocket size, the Magnolia Metal Co., New York, describes its bearing metal and gives simple instruction for making and operating lined bearings. Comparative tests of the metal with others are given.

STORAGE TANKS—A booklet by the Conveyors Corp. of America, Chicago, describes cast iron storage tanks for the reception of dry, loose, bulky material, such as ashes, coal, sand and gravel. Diagrams of the tanks, illustrations of installations and a table of weights, dimensions and capacities are given.

IRON AND STEEL—Unusually handsome dress carries the announcement of Newton Chambers & Co., Ltd., Thorncliffe, England. Illustrations of the works and color plates of various characteristic scenes give the reader an idea of the equipment and nature of the plants, while a minimum of text amplifies the information presented the eye. Products include pig iron, ore, limestone, by-products of coke, coke, concrete construction work, cast iron and steel tanks, steel structural work, castings and cast pipe.

HANDLING EQUIPMENT—In its general catalogue the Webster Mfg. Co., Chicago, lists a wide variety of equipment for the mechanical handling of materials, from simple link chains to coal tipples, with all necessary information for choosing and ordering just what may be best suited to particular needs. Illustrations include halftones of equipment and installations and drawings of many devices with dimensions and angles.

PULVERIZED COAL—The Holbeck Engineering Co., Cleveland, recently has issued a 20 page-booklet on "Pulverized Coal Applied to the Malleable Iron Industry." Advantages in this type of fuel are listed. Views of various parts of the equipment for burning powdered fuel are given and a sectional view of the entire system. Reproduction of photographs show a number of plants using this fuel.

RECUPERATOR FURNACES—A. Hermansen, civil engineer, Woolworth building, New York, has issued a booklet on industrial furnaces using the recuperative principle for preheating air supplied for aiding combustion. In the foreword the matter of combustion is discussed at length and the application of the recuperator is described as it aids in promoting most efficient use of fuel. Numerous drawings and illustrations serve to make the description clear.

STEAM PURIFIERS—Means for freeing steam from moisture and dirt and the necessity for such separation are discussed thoroughly in a booklet issued by the Andrews Bradshaw Co., Pittsburgh. A device manufactured by this company is designed to remove all moisture and impurities from steam and deliver it in a dry state. Illustrations to show the detrimental effects of impure steam on metallic parts of power plants indicate the necessity for such cleaning of steam.

VENTILATORS—"The Gospel of Fresh Air" is the title of a 36-page booklet by the Swartwout Co., Cleveland. Methods of obtaining proper ventilation are discussed and the construction of the ventilator manufactured by the Swartwout company is described. Views are shown of the ventilator installed on public buildings, foundries, heat treating and drop forging plants, boiler rooms, engine rooms and machine shops. Specifications and methods of testing ventilators also are given.

TRAMRAILS—An exceptionally complete treatise on electric tramrails is contained in a catalog recently published by the Cleveland Crane & Engineering Co., Wickliffe, O. Installations in various types of industrial plants and warehouses are shown including a number of views of the system in use in foundries. The various types of carriers and rails are described and specifications are given. Considerable information is given on tramrail switches, cross overs, fittings for rails, etc. The book contains a large number of illustrations and should be of value to any person interested in the subject of tramrails.